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THE WORLD'S LEADING WOODWORKING MAGAZINE

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JUNE 1993 • ISSUE NO. 61
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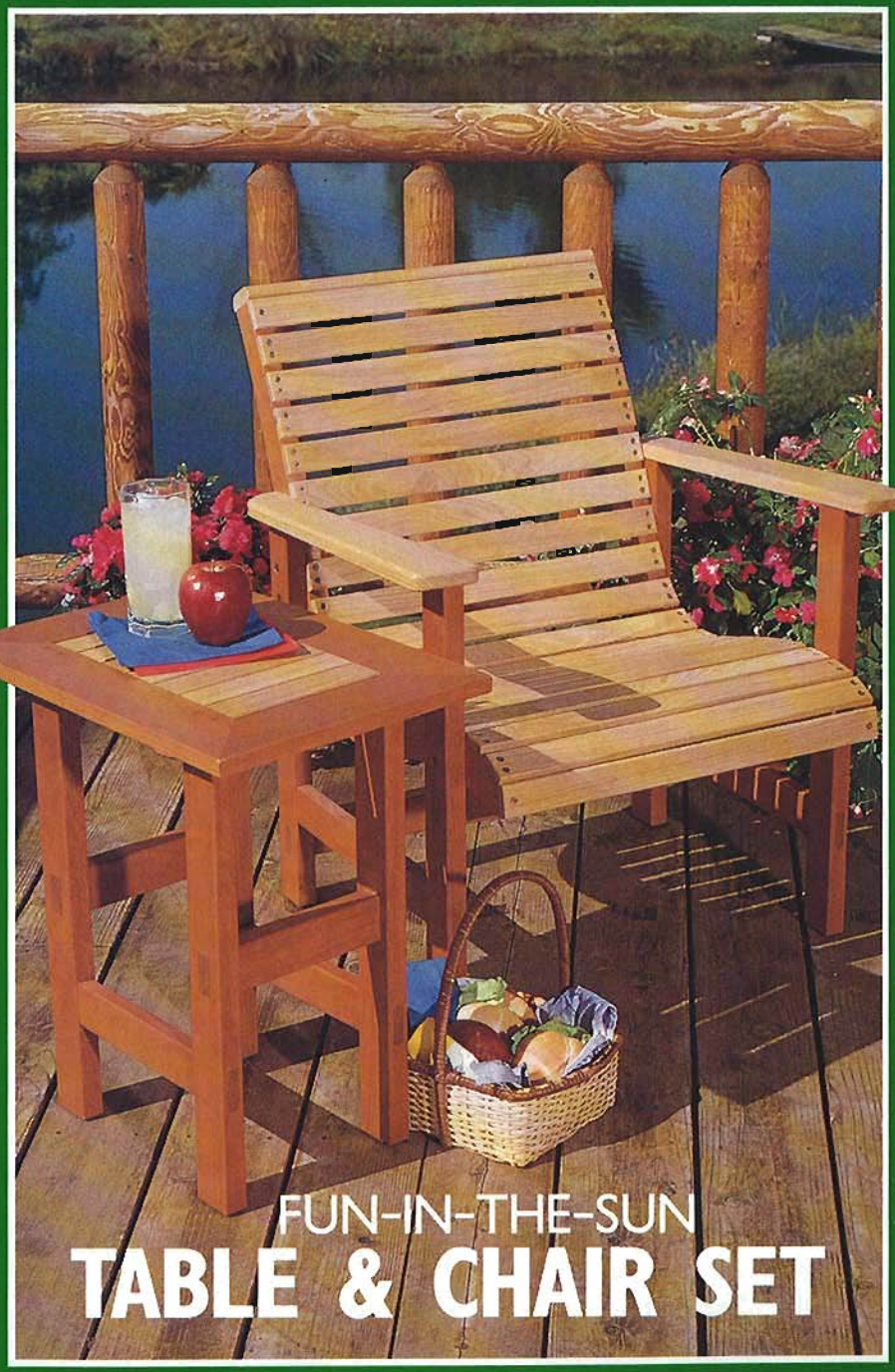

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THE EDITOR'S ANGLE

HOW WE INVOLVE MANUFACTURERS IN OUR TOOL-TESTING PROCESS

Above, Giorgio Pozzo (right) and Jim Brewer (middle) from Freud talk with Bob McFarlin, one of *WOOD* magazine's product testers, about our saw blade testing.

Of all our articles in *WOOD*® magazine, none get a closer look from both readers and manufacturers than our tool articles. Small wonder! For many of our readers, our advice on this or that tool category represents their single best source of information available. And the manufacturers, not surprisingly, spend time poring over the test results to see if we gave their tools a fair shake.

Usually, when products/techniques editor Bill Krier lets a company know that we want to test one or more of its tools, our company contact sends us the tool(s), along with any information he thinks we might need. Then we test the product, and if we come up with something problematic, Bill calls back and asks the contact person to respond to our concern, and to supply more information if needed. We feel we owe manufacturers this courtesy.

Too, sometimes a company will send someone to Des Moines to demonstrate one or more of their products and explain features to Bill and other staffers. Such visits always tend to be educational for us. Recently, for example, the folks from Freud flew in to talk about circular saw blades and look in on our testing procedures. They actually saw us test their carbide-tipped saw blades for an issue 63 tool review.

You might wonder at this point: Do companies that represent their product in person have an edge on other companies when it comes testing time? Absolutely not! Do we allow manufacturers to preview our articles prior to publication? No way! What really counts, in the final analysis—and what you read about in *WOOD* magazine—is the quality of the product and how well it performs in our testing. For more, check out Bill Krier's article beginning on *page 30.*

Larry Clayton

Photograph: Bill Krier

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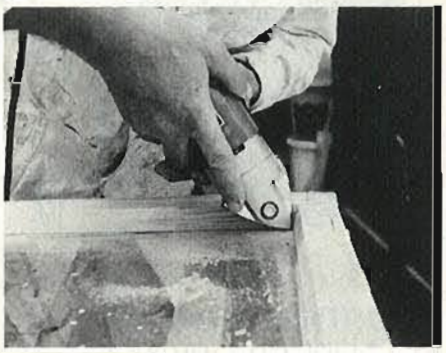

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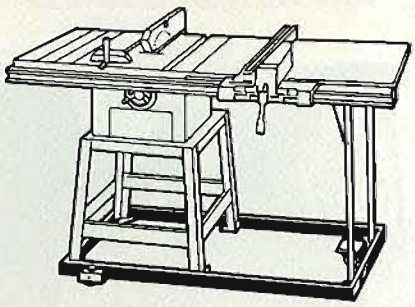

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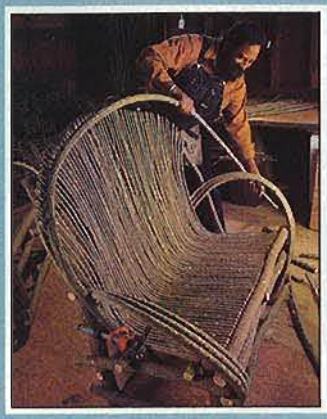
This issue's cover wood grain: sycamore — *Cover photograph: John Hetherington*

JUNE 1993 — ISSUE NO. 61



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A native of Punjab, India, Tehal Virk has discovered the American dream making and selling magnificent willow furniture in his new home, Belgium, Wisconsin.

TURNING
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Graceful contours, beads, and a spired top hint at the beauty of this perfume bottle. An inserted glass vial serves as the actual container.

How *WOOD* magazine tests tools 30
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SHOP-TESTED TECHNIQUES
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NOW YOU CAN BUILD IT
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DEVELOP YOUR SHOP SKILLS
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Celebrate summer by making this handsome outdoor table-and-chair combo. Then, enjoy your handiwork with a cool, refreshing beverage.

CARVING
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Discover a decorative technique developed by old-world craftsmen for embellishing wooden spoons, bowls, and other household items.

Patterns, patterns, everywhere 56
Ever see a magazine photograph or other image that would make a great scrollsaw pattern? Here's how to put it to good use.

Smiley, the rocking snail 58
Add this happy-go-lucky mollusk to your playroom, and then watch your child's eyes light up as he or she takes it for a romp.

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Little red tote barn 68
Cows, horses, and fence sections all fit in this kid-pleasing carryall.

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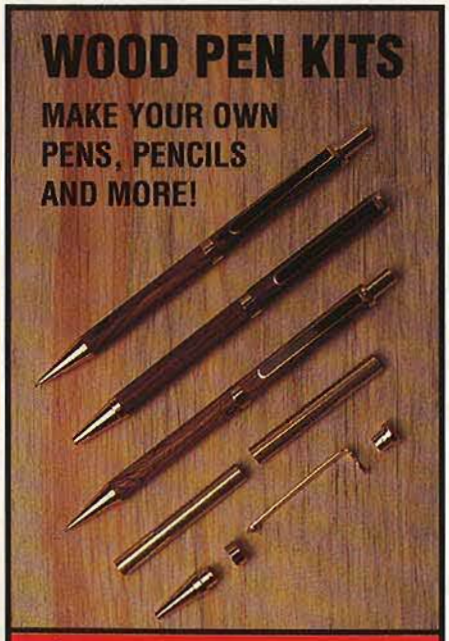

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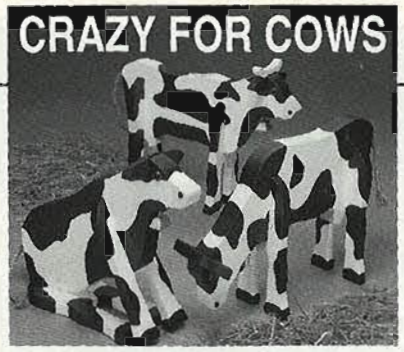

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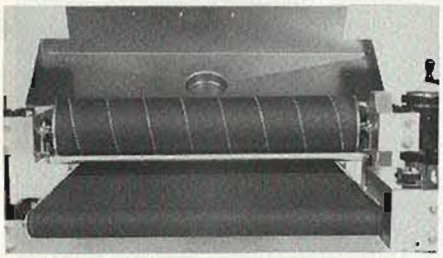

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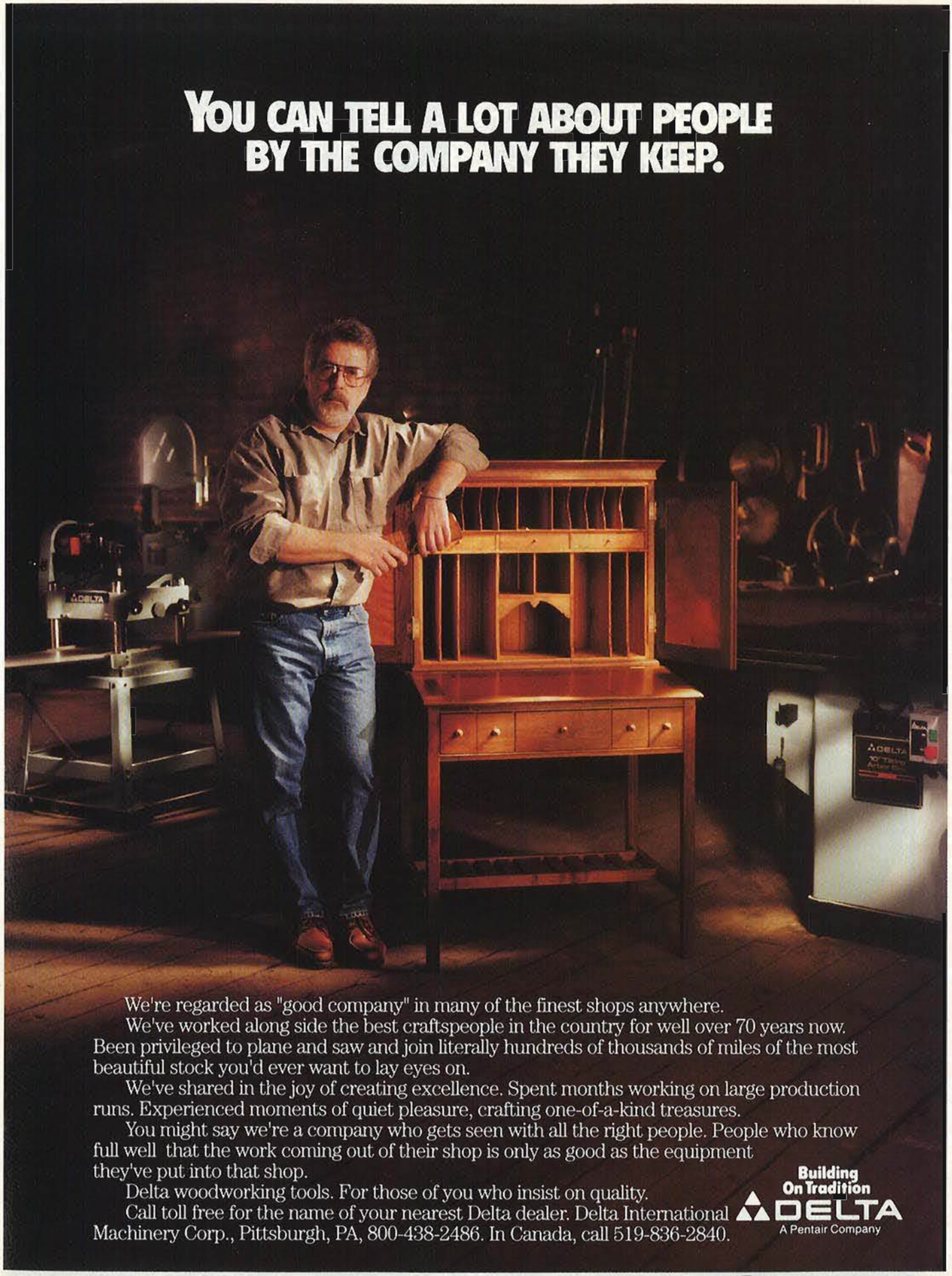

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TALKING BACK

Print this article

We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Talking Back, Better Homes and Gardens® *WOOD*® magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

Reindeer light up the night

I ordered your plans for the [two] reindeer last year and completed them. After painting them white, I drilled holes and inserted white Christmas lights in the antlers. The weight of the lights makes the [reindeer] heads sway in the wind and looks awesome! Thanks for the wonderful project.

Karen Dattalo, Elmwood Park, Ill.

Thanks, Karen. You might be interested to know that our Christmas holiday decoration plans now include a Santa, sleigh, and/or the reindeer. The price for one plan is $9.95. Two plans are $18.95, and three plans are $26.95. Be sure to write the name of the plan or plans you are ordering in the lower left hand corner of your check. To order, send either check or money order to:

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WOOD a must-read

Your publication was recommended by a fellow woodworker as being a must if you enjoy woodworking of any kind. He wasn't wrong. I read your magazine from cover to cover and have enjoyed doing several of the projects. I also make use of the advertisers, contacting them for several woodworking items. I look forward to being a regular subscriber for many years to come and plan to expand my hobby in a few years as I move into retirement.

—Fred Rankin, Northville, Mich.

Continued on page 8

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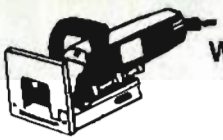

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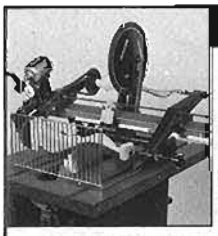

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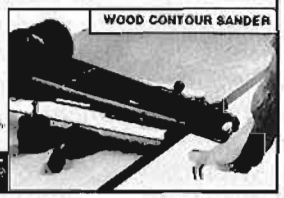

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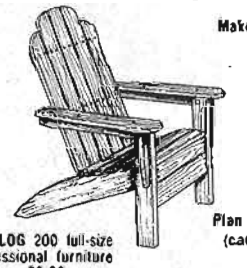

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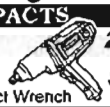

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2665K	12v Cyclone™ Drill Kit	158
2765K	w/Keyless chuck	169
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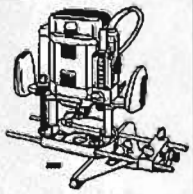

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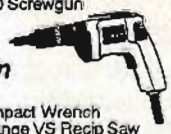

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*See *Fine Woodworking*, July/August, 1991, pg. 59

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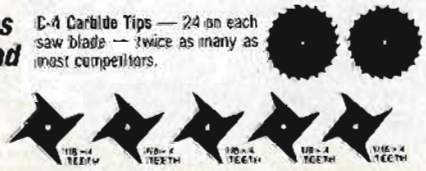

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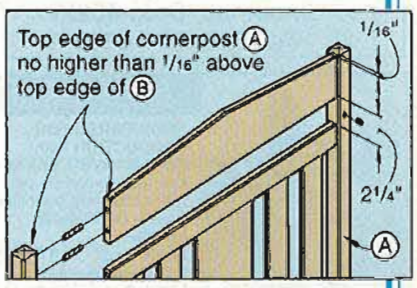
TALKING BACK

Continued from page 6

Crib safety alert!

We've received several letters from readers pointing out a potential safety hazard in our baby crib (February 1993 issue). The corner posts (A) are too high above the top edges of the top rails (B). The posts in our crib project 1⅛" above the top rails.

The regulations we received from the U.S. Consumer Product Safety Commission (USCPSC) do not mention this requirement. After a tip from a reader, we learned that the Juvenile Products Manufacturers' Association ammended their voluntary standards to allow no more than 1/16" projection above the top rail. (See the corrected drawing.) The USCPSC supports that recommendation although it is not part of their written standard.



If you've already built the crib, or are planning on building one, trim 1 1/16" from the top end of the corner posts. We appreciate our readers informing us of this important amendment.

Biscuits soak up moisture

I have owned and used a Virutex 0-81 ever since they came on the American market. Biscuit joinery surpasses dowel joinery in many ways, but is not trouble free. Biscuits do not stay at their compressed thickness in the changing humidity of a nonhumidity-controlled shop. This can cause problems, especially if you've inserted a biscuit in a slot and have waited several days to join into the mating slot. Removing the offending biscuit can be a trying experience.

—*Tom Moore, Clarksville, Va.*

Sticky biscuits can be prevented, Tom. First, don't insert biscuits until you are ready to join the two pieces. We can think of no reason for doing so. Second, always store the biscuits in an airtight container. A lidded, airtight, plastic container or Ziploc resealable bags work great.

An apology to Jet

In our Ask WOOD of the January 1993 issue, page 78, we ran a photo of a Jet drill press alongside an answer to a reader's question. The reader complained that his drill press (manufactured by another company) ran so hot he could not touch the motor. The Jet drill press photo was unintentionally run alongside the article. The truth is, we're pleased enough with the Jet drill press that we included one in our IDEA SHOP.

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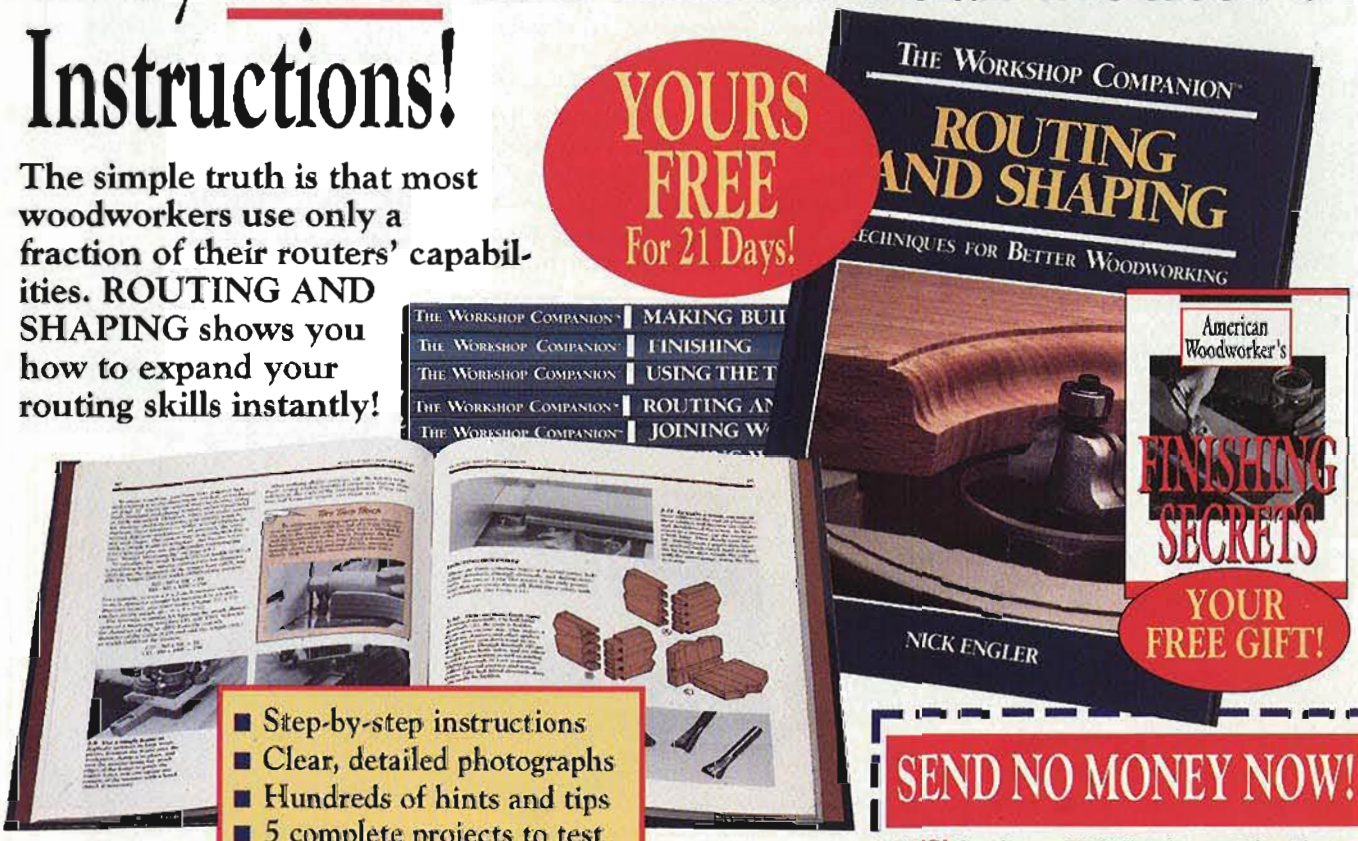

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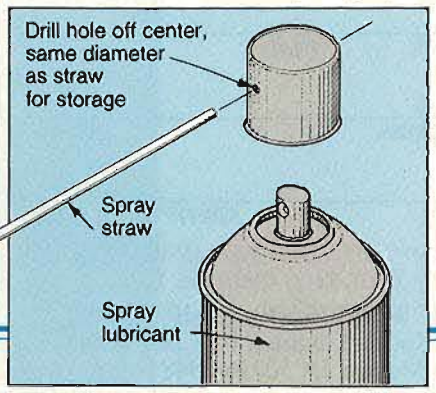
Drilled can cap prevents spray straw from straying

You need to squirt some spray lubricant into a tight spot on one of your tools. Now, if you could just find that little red straw. . . .

TIP: When you do find the elusive spray tube, don't lose it again. Simply drill through the plastic can cap with a drill bit the same diameter as the straw. (A 5/64" hole made a tight fit for the tubes in our shop.) Then, stow the straw by sticking it through the cap; it always will be right there with the can when you need it.

–Robert N. Anderson, Fairfax, Vt.

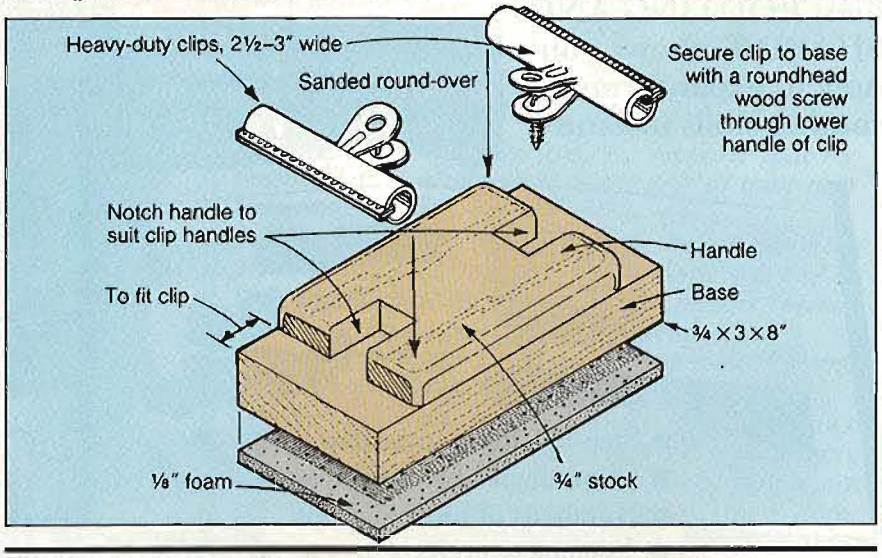


Paper clips grip sandpaper on block

A hand-sanding block still comes in handy around the workshop. It sure would be nice to have one that allows quick and easy sandpaper changes.

TIP: Incorporate spring-type paper clips into your sanding block for a sure, simple sandpaper holder. Purchase a pair of clips 2½–3" wide. Build a sanding block from two pieces of scrapwood as shown *below.* This block uses ⅓ of a standard sheet of sandpaper. Alter the dimensions to make blocks for other sizes.

–Rene Stebenne, Whitinsville, Mass.



TOP SHOP TIP

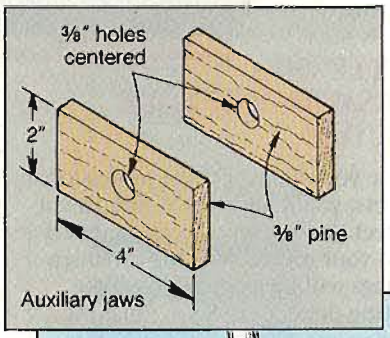
For his tip, Rene receives a Black and Decker Powerfile and model 7441 finishing sander, *right.*

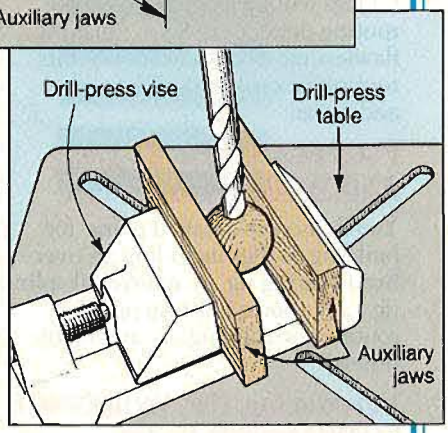
Eliminate fears when drilling spheres

It's always tricky drilling holes in wooden balls. You just can't quite get a good grip on them with a drill-press vise or clamp.

TIP: Make a simple set of auxiliary jaws that will give a vise or handscrew clamp a firm hold on wooden balls. Just cut two pieces of ⅜"-thick stock (use pine or some other soft-textured wood) to fit your clamp or vise jaws (the ones shown measure 2×4"). Then drill a ⅜" hole through the center of each. Sandwich the ball between the holes, and place the assembly in the vise or clamp for a solid grip. If you have a lot of balls to bore, affix the auxiliary jaws to the clamp or vise with double-faced tape.

–Vincent Ferello, Sarasota, Fla.





Continued on page 13

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TIPS FROM YOUR SHOP (AND OURS)

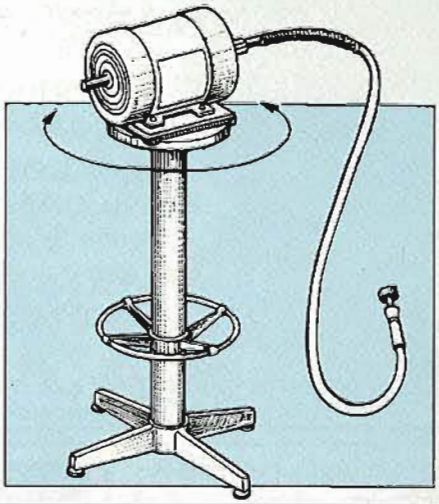
Continued from page 10

Motor for flexible shaft swivels on barstool stand

Mounting the electric motor for your flexible-shaft tool on the workbench isn't always convenient. You might want to use the tool somewhere else. And, anyway, you may need to move the motor to avoid kinking the shaft as you manipulate the handpiece.

TIP: Perch the motor on a stand made from an old swivel barstool (look for one at garage sales or secondhand stores). Replace the seat with ¾" plywood of suitable size, and then mount the motor to the plywood. Add weight to the bottom of the stool for stability, if necessary. Now, you can place the floor-standing motor wherever you need it in your shop. What's more, the motor will swivel easily to follow the shaft.

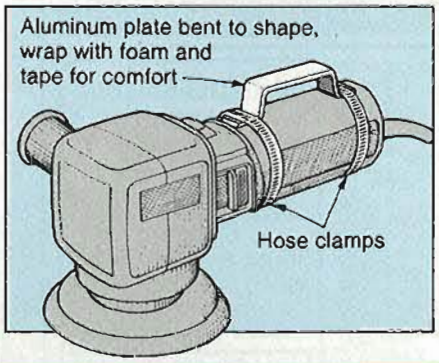
–Gene Krietemeyer, Columbus Grove, Ohio



Auxiliary handles aid arthritic woodworker

Arthritis makes it increasingly difficult for you to grip some of your power tools, but you don't even want to think about giving up the pleasure of woodworking.

TIP: An additional handle can help you hang onto many tools such as the sander shown *right*.



Form the handle from 1–1½" aluminum strap stock ⅛" thick, and attach it to the tool housing with hose clamps or other appropriate hardware. *Do not* drill holes or insert screws into tool housings without consulting a tool-service professional. Wrap the new handle with plastic foam and tape for more comfort.

–Wayne Pepper, Janesville, Wis.

Continued on page 14

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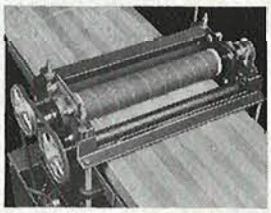

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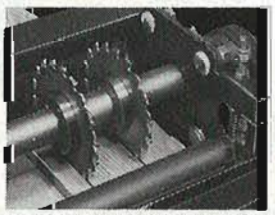

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TIPS FROM YOUR SHOP (AND OURS)

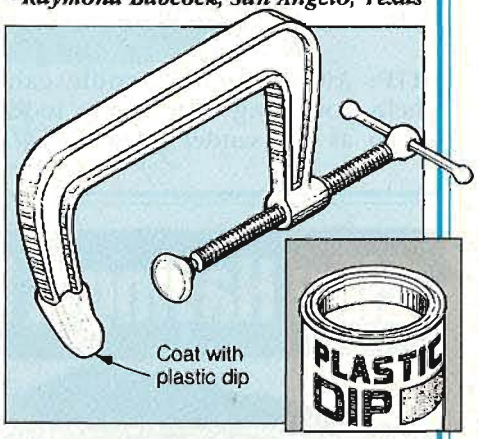
Continued from page 13

Plastic dip works great on other end of tools, too

There are all sorts of ways to protect wood from clamps. Unfortunately, most would be easier to do if you had three hands.

TIP: Coat the business end of your clamps with the plastic-dip material marketed to coat tool handles. It dries to a soft, flexible coating that will protect even finished wood. Apply it by dipping or brushing, taking care to keep it out of movable joints or threads. Coat the grip end of a pair of pliers or locking pliers, too, to make a handy tool for pulling out wooden axle pegs and the like.

–Raymond Babcock, San Angelo, Texas



MORE TIPS FROM OUR WOODWORKING PROS

- To rout a lengthwise groove in a dowel, see the simple scrapwood jig on *page 65*.
- Mount heavy objects to the wall with our clever hanger block, shown on *page 42*.
- Looking for an alternative to time-consuming hinge mounting? Then give no-mortise hinges a try. See how we used them for our clock on *page 40*.
- Check out our tried-and-true painting process for wood projects on *page 61*.
- Refer to our step-by-step drawing on *page 50* for a look at a way to form mortises for your next project.

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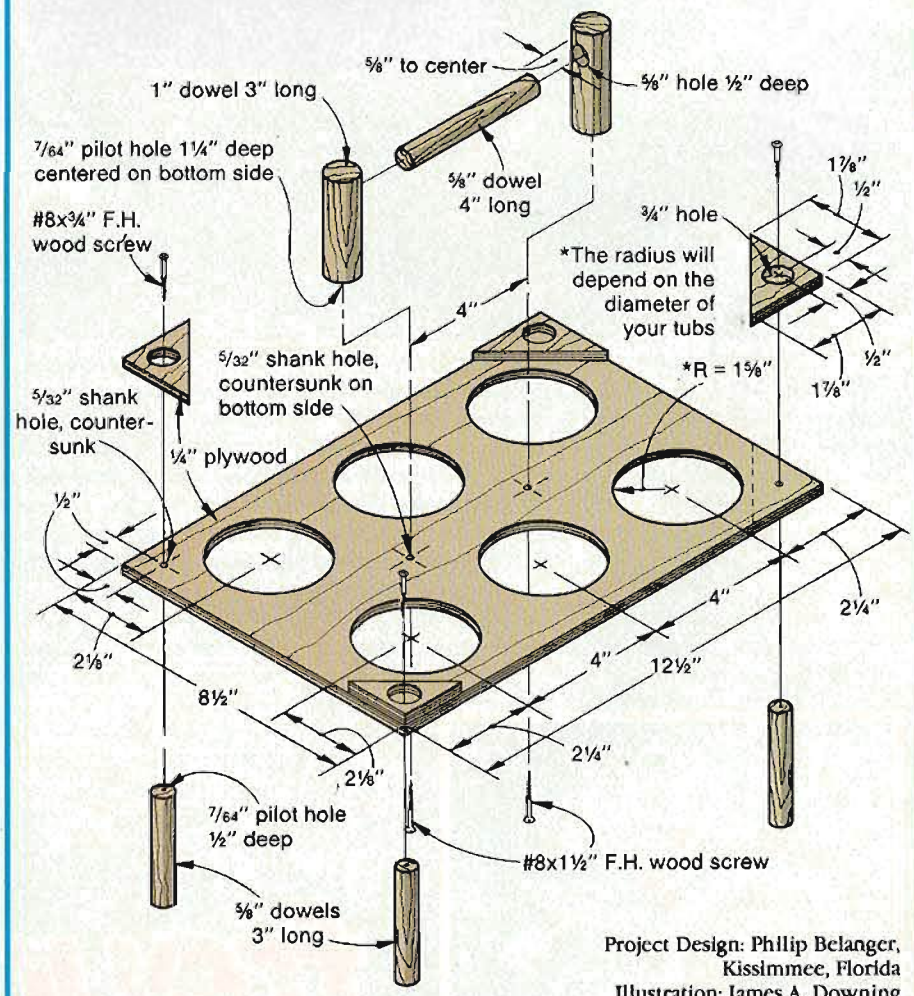

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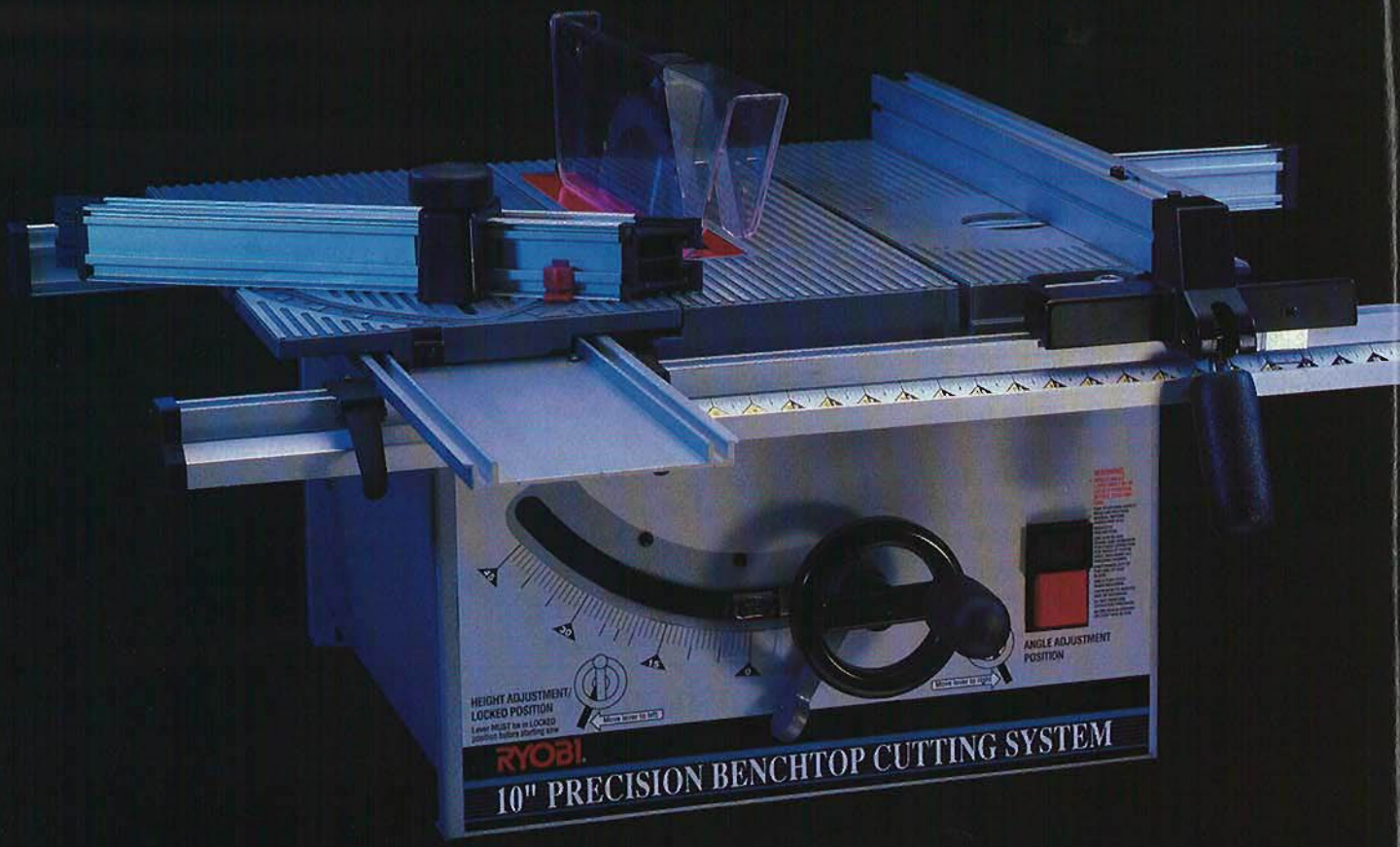

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ASK WOOD

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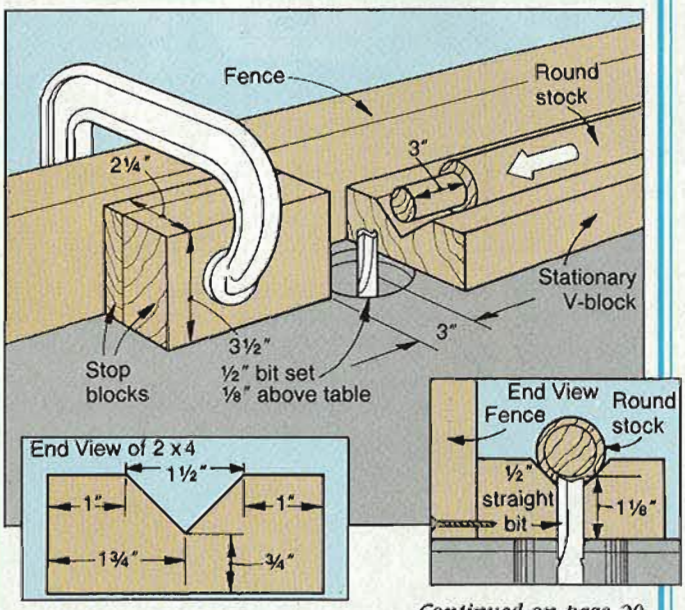
Making tenons on round stock

I'm building a quilting frame for a ladies sewing group. I need to make a ⅞" tenon, 3" long, on each end of an 8' long dowel that's 1¼" in diameter. How can this be done with such a long piece?

—Fred Drewette, Lake Elsinore, Calif.

Here's how, Fred. Mount a ½" straight bit in your table-mounted router. Then construct a V-block according to the dimensions shown below. Attach the V-block to an auxiliary wood fence with wood screws. (An ordinary straight 2x4" will work for this.) Clamp the fence and V-block to the table securely. The groove in the V-block should align with the center of the router bit. Set the bit 1 ⅛" above the table. Next place a stop block against the fence and 3" to the left of the far edge of the bit. (See below.) Now lay your 8' dowel in the V-block and place a support under the part of the dowel that extends beyond the table. Begin routing.

Note: When using this set-up, make multiple passes by sliding the dowel into the bit, making each succeeding cut by rotating the dowel counter clockwise. After the desired material is removed, clean off the tenon lip by rotating the dowel in a clockwise motion.



Continued on page 20

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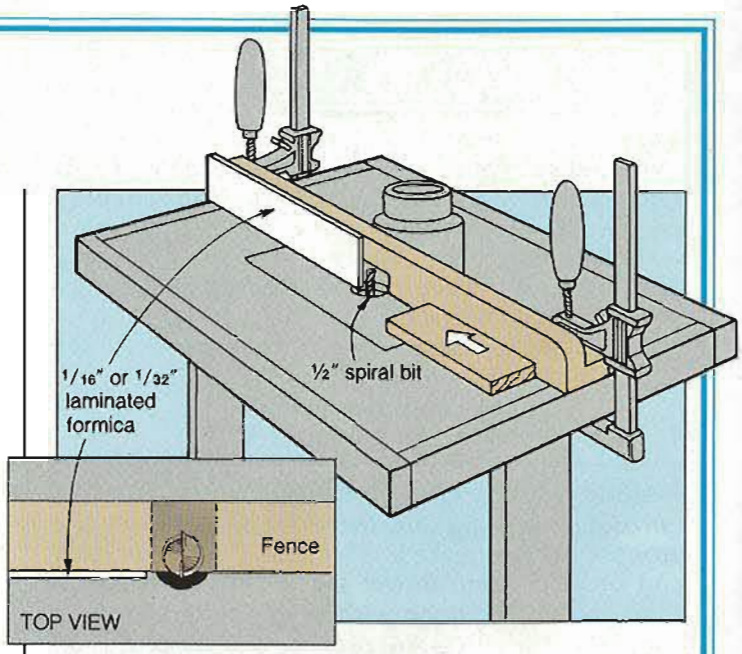
ASK WOOD

Continued from page 19

Turn your router table into a handy jointer

From necessity, virtually everything I have built I've made from edge-glued scrap. I joint every piece on a router table without using a split fence. I simply clamp a straightedge to the table and run the workpiece between it and a straight bit, adjusting the straightedge to take off whatever amount I want. Since I have never seen this technique suggested in any literature, I assume there must be something dangerous or unsuitable about it. Could you please enlighten me?

—Bert Mason, Jr., Milwaukee, Ore.



Your premise is good, Bert, but we'd suggest changing your technique. Running a router bit in the open as you describe can be dangerous. Plus, binding and even kickback could occur at any time. However, using your router table as a jointer works well on stock up to 1 1/16" thick.

We asked router expert Brad Witt, owner of Woodhaven, Davenport, Iowa (800/344-6657), to tell us how you can safely and easily joint stock on a router table. According to Brad, "You need to build an offset fence to make it work effectively and safely. Instead of spending money on a commercial split fence, here's what I advise: construct a fence extension like the one shown above. *Along the edge of one half, laminate a 1/16" piece of plastic laminate (1/32" for finish work).*

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C1179	1-1/4"	5/8"	2-1/4"	3/8"	$14.00

1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	RADIUS r	PRICE
C1184	1"	1/2"	2-1/4"	1/4"	$11.00
C1185	1-1/8"	1/2"	2-3/8"	5/16"	$12.00
C1186	1-1/4"	5/8"	2-1/2"	3/8"	$14.00

ROMAN OGEE 2 Flutes with Bearing Guide

1/4" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	RADIUS r	PRICE
C1153	1-1/8"	1/2"	2-1/16"	5/32"	$16.00
C1154	1-1/2"	3/4"	2-1/4"	1/4"	$18.00

1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	RADIUS r	PRICE
C1155	1-1/8"	1/2"	2-1/4"	5/32"	$16.00
C1156	1-1/2"	3/4"	2-1/2"	1/4"	$18.00

CLASSICAL BITS with Bearing Guide

1/4" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1289	1-1/4"	5/8"	2-1/8"	3/8"	$25.00
C1290	1-1/2"	3/4"	2-1/4"	1/2"	$25.00

1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1291	1-1/4"	5/8"	2-3/8"	3/8"	$25.00
C1292	1-1/2"	3/4"	2-1/2"	1/2"	$25.00

SOLID CARBIDE SPIRAL 2 Flutes

1/4" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	PRICE
C1441	1/8"	3/8"	2"	$15.00
C1442	3/16"	5/8"	2"	$15.00
C1454	7/32"	3/4"	2"	$19.00
C1443	1/4"	3/4"	2"	$15.00

1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	PRICE
C1559	5/16"	7/8"	3"	$25.00
C1446	3/8"	1"	3"	$30.00
C1447	1/2"	1"	3"	$30.00

Due to the nature of solid carbide, these bits are not warranteed against breakage.

DOUBLE FLUTED STRAIGHT BITS

1/4" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	PRICE
C1001	1/4"	3/4"	2"	$6.00
C1002	5/16"	11/16"	2"	$6.00
C1003	3/8"	3/4"	2"	$6.00
C1004	1/2"	3/4"	2"	$8.00

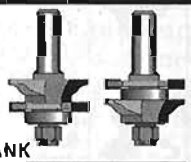
1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	PRICE
C1008	1/4"	3/4"	2-1/2"	$6.00
C1009	5/16"	3/4"	2-1/2"	$6.00
C1010	3/8"	3/4"	2-1/2"	$6.00
C1011	1/2"	1-3/16"	2-1/2"	$8.00

REVERSIBLE STILE & RAIL

ROMAN OGEE (C1392)

BEVELED (C1653)



OGEE (C1652)

CLASSICAL (C1654)

1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	PRICE
C1392	1-5/8"	13/16"	2-7/8"	$49.95
C1652	1-5/8"	13/16"	2-7/8"	$49.95
C1654	1-5/8"	13/16"	2-7/8"	$49.95
C1653	1-5/8"	13/16"	2-7/8"	$49.95

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5° FACE CUT (C1399)

15° FACE CUT (C1400)

OGEE (C1401)

12° FACE AND QUARTER ROUND C1402)

CONVEX (C1403)

1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1399	2-5/8"	1/2"	2-1/4"	1-1/16"	$29.95
C1400	2-5/8"	7/16"	2-1/4"	1-1/16"	$29.95
C1401	2-5/8"	9/16"	2-1/4"	1-1/16"	$29.95
C1402	2-5/8"	7/16"	2-1/4"	1-1/16"	$29.95
C1403	2-5/8"	1/2"	2-1/4"	1-1/16"	$29.95

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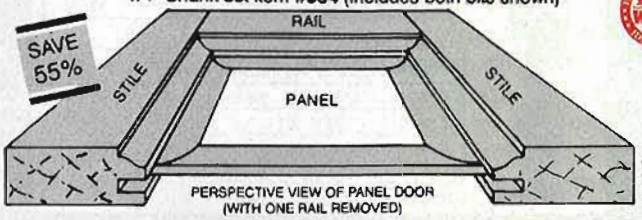

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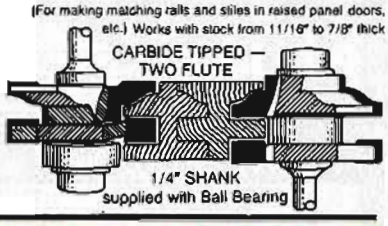

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ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#601	Solid Carbide	1/8" Spiral Cutter		1/8"	1/2"	1/4"	$ 9.00
#603		1/4" Spiral Cutter		1/4"	3/4"	1/4"	$12.00
#903		1/4" Spiral Cutter		1/4"	3/4"	1/2"	$12.00
#904		3/8" Spiral Cutter		3/8"	1"	1/2"	$24.00
#905		1/2" Spiral Cutter	*Proper Adaptor Will Be Supplied	1/2"	1 1/2"	1/2"	$29.00
#530		3/16" Edge Beading	3/16" Dia. of Circle		1/2"	1/4"	$15.00
#531		5/16" Edge Beading	5/16" Dia. of Circle		1/2"	1/4"	$15.50
#350		1/8" Round Over	1/8" R	3/4"	3/8"	1/4"	$11.00
#351		3/16" Round Over	3/16" R	7/8"	1/2"	1/4"	$11.00
#230		1/4" Round Over	1/4" R	1"	1/2"	1/4"	$12.00
#353		5/16" Round Over	5/16" R	1 1/8"	1/2"	1/4"	$14.00
#209		3/8" Round Over	3/8" R	1 1/4"	5/8"	1/4"	$15.00
#355		1/2" Round Over	1/2" R	1 1/2"	3/4"	1/4"	$17.00
#655		1/2" Round Over	1/2" R	1 1/2"	3/4"	1/2"	$17.00
#656		3/4" Round Over	3/4" R	2"	7/8"	1/2"	$21.00
#199		Multiform Moulding	Unlimited Patterns	2 1/4"	2"	1/2"	$40.00
#205		1/4" Cove	1/4" R	1"	1/2"	1/4"	$12.00
#206		3/8" Cove	3/8" R	1 1/4"	9/16"	1/4"	$13.00
#207		1/2" Cove	1/2" R	1 1/2"	5/8"	1/4"	$14.00
#643		1/2" Cove	1/2" R	1 1/2"	5/8"	1/2"	$15.00
#208		3/4" Cove	3/4" R	1 7/8"	3/4"	1/2"	$26.00
#231		5/32" Roman Ogee	5/32" R	1 1/4"	15/32"	1/4"	$16.00
#232		1/4" Roman Ogee	1/4" R	1 1/2"	3/4"	1/4"	$17.00
#506		1/2" Pattern	Flush Trim	1/2"	1"	1/4"	$15.00
#508		3/4" Pattern	Flush Trim	3/4"	1"	1/4"	$17.00
#366		1/8" Slot Cutter	3/8" Deep	1 1/4"	1/8"	1/4"	$14.00
#368		1/4" Slot Cutter	3/8" Deep	1 1/4"	1/4"	1/4"	$14.00
#204		3/8" Rabbeling	3/8" Deep	1 1/4"	1/2"	1/4"	$13.00
#670		3/8" Rabbeling	3/8" Deep	1 1/4"	1/2"	1/2"	$14.00

ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#211		3/8" Core Box	round nose	3/8"	3/8"	1/2"	$10.00
#212		1/2" Core Box	round nose	1/2"	11/32"	1/4"	$13.00
#418		3/4" Core Box	round nose	3/4"	5/8"	1/4"	$15.00
#213		1" Core Box	round nose	1"	3/4"	1/2"	$17.00
#548		Lockmitre		2"	7/8"	1/4"	$32.00
#214		1/4" Straight	plunge cutting	1/4"	3/4"	1/4"	$ 6.50
#216		3/8" Straight	plunge cutting	3/8"	1"	1/4"	$ 6.50
#474		1/2" Straight	plunge cutting	1/2"	1"	1/4"	$ 7.00
#219		3/4" Straight	plunge cutting	3/4"	1"	1/4"	$ 9.50
#779		3/4" Straight	plunge cutting	3/4"	1 1/2"	1/2"	$10.00
#462		1/2" Bull Nose	1/2" Dia. of Circle		3/4"	1/4"	$16.00
#464		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/4"	$21.00
#764		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/2"	$21.00
#545		Tongue & Groove	Straight	1 5/8"	1"	1/4"	$29.00
#845		Tongue & Groove	Straight	1 5/8"	1"	1/2"	$29.00
#546		Tongue & Groove	Wedge	1 3/16"	1"	1/4"	$29.00
#846		Tongue & Groove	Wedge	1 5/8"	1"	1/2"	$29.00
#450		1/8" Beading	1/8" R	3/4"	3/8"	1/4"	$11.00
#233		1/4" Beading	1/4" R	1"	1/2"	1/4"	$13.00
#454		3/8" Beading	3/8" R	1 1/4"	5/8"	1/4"	$15.50
#455		1/2" Beading	1/2" R	1 1/2"	3/4"	1/4"	$17.00
#500		3/8" Flush	Trimming	3/8"	1/2"	1/4"	$ 7.00
#501		3/8" Flush	Trimming	3/8"	1"	1/4"	$ 7.50
#503		1/2" Flush	Trimming	1/2"	1"	1/4"	$ 8.50
#221		1/2" Flush	Trimming	1/2"	1 3/16"	1/2"	$ 8.00
#558		Thumbnail		1 3/16"	3/8"	1/4"	$18.50
#858		Thumbnail		2 1/2"	3/4"	1/2"	$36.00
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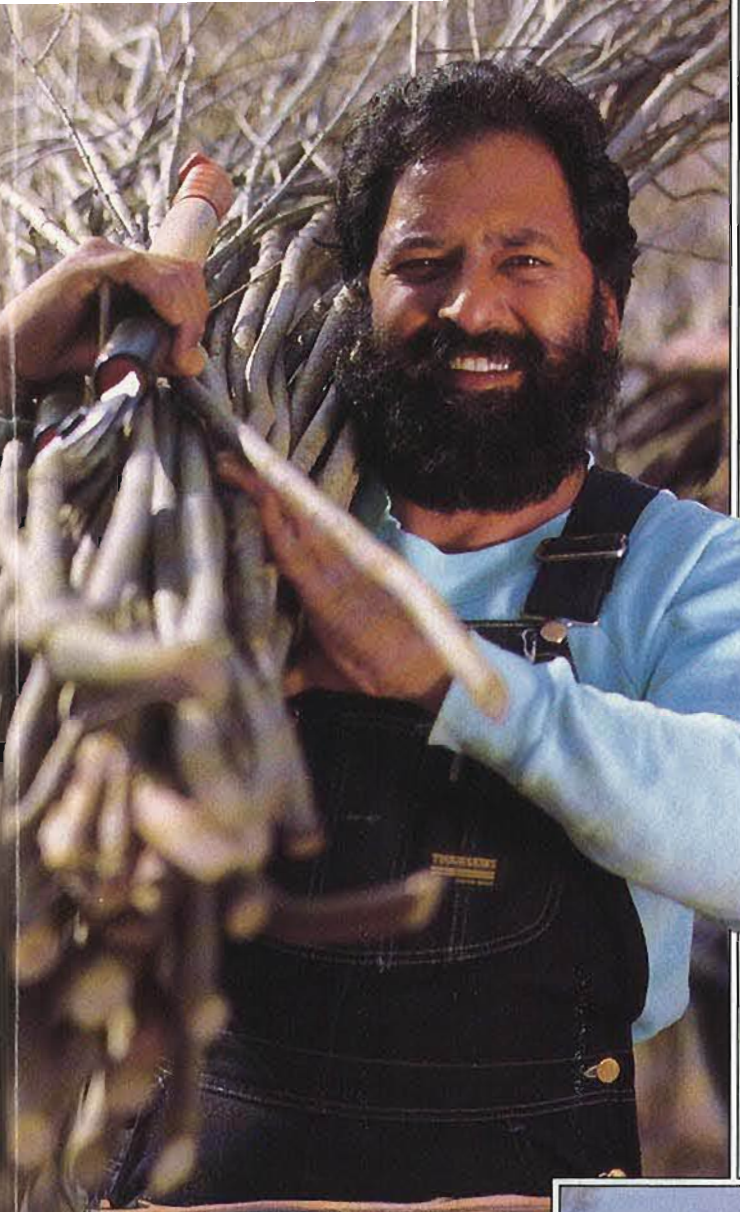

Print this article

Tehal Virk's WONDERFUL WILLOW WORKS

A mason in his homeland of India, this craftsman now turns his skilled hands to working an abundant native Wisconsin stock.

Belgium, Wisconsin, a neat-as-a-pin rural community that's little more than a stone's throw from Lake Michigan, has become culturally enriched in the past few years. And it's due to Tehal Virk, a former mason from Punjab, India.

How does he do it? Some townsfolk would say through his schoolbook English. Others would point to his friendliness, sharp wit, and obvious craftsmanship. All true.

Tehal (pronounced "Tall"), an expert with brick and stone, left India in 1985 to join cousins in the U.S. At first, the American Dream evaded him as he found himself near Milwaukee pumping gas for a living. But things changed as soon as he met Zaida Thompson, an antique dealer, small-town entrepreneur, and now his wife.

Through Zaida's encouragement, Tehal tested skilled hands by creating new things. But it was when he began crafting willow furniture that he hit pay dirt. "Zaida had a photograph of some," Tehal recalls fondly. "She asked me, 'Do you think you can do this?' I said no problem at all, I'm a handy guy. But it wasn't so easy!"

That was seven years ago. Now, Tehal, 40, fills orders for his "Wonderful Willow" business from as far away as France.

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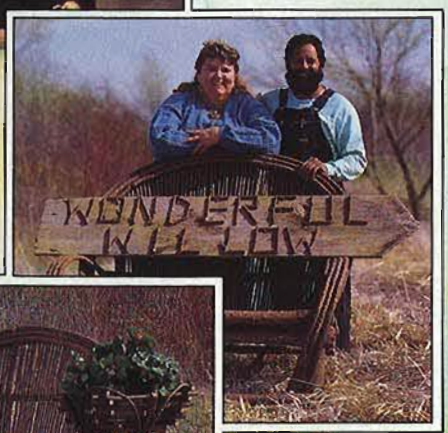


▶ Tehal Virk and his wife, Zaida Thompson, pose proudly behind Tehal's hand-hewn business sign and settee of wild willow.

▼ At $225 for a chair and $395 for a settee, Tehal's furniture sells as fast as he can make it.

There's tromping in the willow thicket, but no one is visible. Then suddenly, a bundle of sticks appear, their ends poking through the near-impenetrable mass of saplings and branches. Next comes a smiling brown face framed by black hair. Attached to it, a compact body sways slightly under the load.

"I have to cut and carry like this at least twice a week nearly every week of the year to keep up with my furnituremaking," says Tehal, puffing. Bending, he tosses the bundle of furniture-to-be to the ground from his shoulder. "But for each one I cut, five come up from the stump in the spring. So, if I cut 100 sticks, I get 500 next year in their place. I guess I'll never run out."

After a half-dozen or so more excursions back into the thicket, Tehal has enough stock to haul to the shop. "We have about six acres of willow around the house here," he says, sweeping his arm before him. "And I also cut on land near the lake that belongs to a friend—he likes me to thin it out. But I may be getting too old for all this work," he laughs, hoisting a bundle into the back of his truck.

Worthy willow

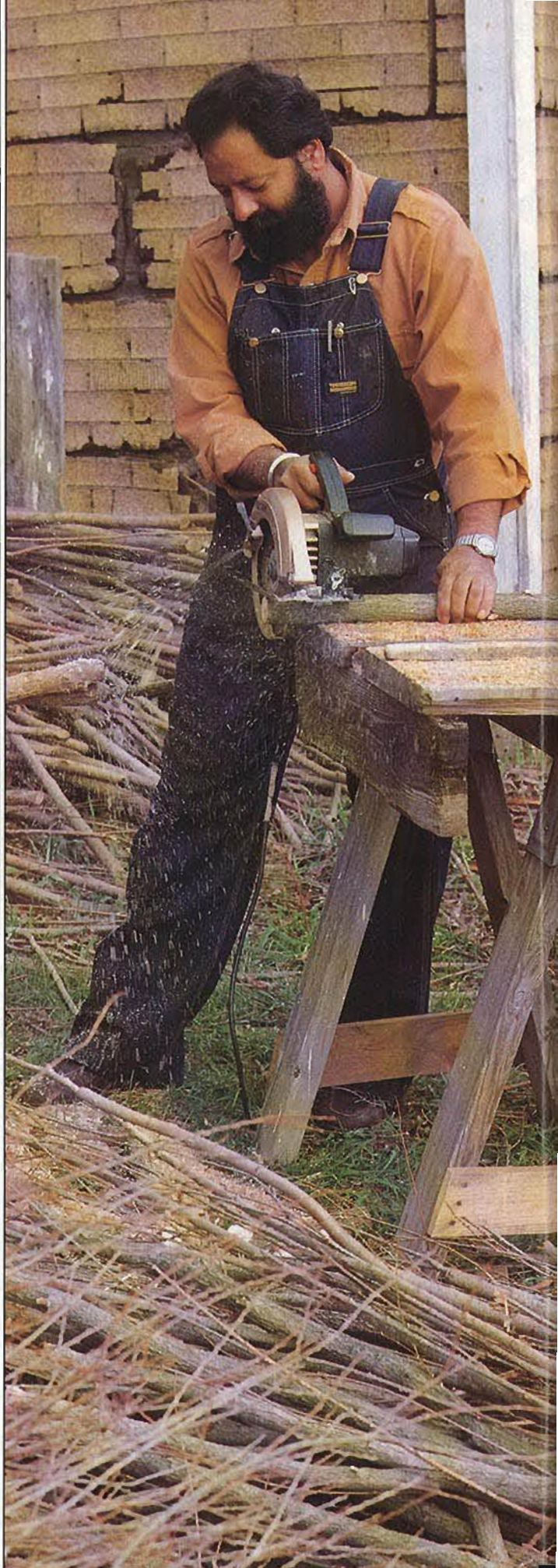
North America claims at least 100 species of willow, many growing only to shrub size. But, there are at least 40 species that attain tree status. And around eastern Wisconsin where Tehal gathers stock, he has the choice of several.

"Some people call it swamp willow, others say sandbar willow, but I like to call it diamond willow," Tehal notes. "See the little diamond marks in the bark?" He points to a diamond-like spot on the slender stalk.

Editor's note: *Actually, to be botanically correct, Tehal's "swamp" willow is peach-leaf willow. His "sandbar" willow happens to be exactly that. But his "diamond" willow we know as black willow, and it has the potential to become the largest of the three. For Tehal's use, though, all of them will work if he harvests with a selective eye, and then cares for the wood properly.*

"When I started, I didn't have anyone to teach me, and the sticks I picked up weren't nearly as good as the ones I use now," he says. "In my sticks there are no knots. Because if there are knots, the stick will crack there when you bend it."

According to Tehal, there's also a difference between fast-growing and slow-growing willow. "Willow growing in water will be lighter and softer because it grew fast, like it had fertilizer."



▶ In cool weather, freshly cut willow can remain green for several months. But Tehal prefers to process right away the sticks he hauls from the thicket to be bent. With a portable circular saw, Tehal cuts a load to length.

Although this willow worker utilizes a variety of sizes in his pieces—from pencil-thin on mirror frames to 4"-diameter for legs—he thinks not in inches, but in ages. "The sticks I put on the seats are at least two years old," he explains. "The sticks for arms are about three years old. And the sticks I put on the rounds [backs] average four to five years old. For the frame, I use pieces 10 to 15 years old." Tehal doesn't count growth rings to help with this reckoning, though. He relies on memory.

"Whenever and wherever I cut, I know the shoots will come in the spring. So after a couple of springs, I know that the shoots in one place will be good for seats, in another, arms. I know where they all are," he says as he heads his truck toward town.

Stowing a stock of sticks

Behind Tehal's shop on Belgium's main street, stacks of willow cuttings, organized by diameter, fill the spaces between outbuildings. Walking and talking, he comments on them.

"All the willow I cut doesn't have to be worked green, but it does have to have the bark on tight. That's why I pile it in the shade or under cover—it will dry slowly then."

Tehal won't bend frame parts, such as legs and crosspieces, so he lets them dry out as they came from the thicket. But for willow that he must bend, the processing begins almost as soon as

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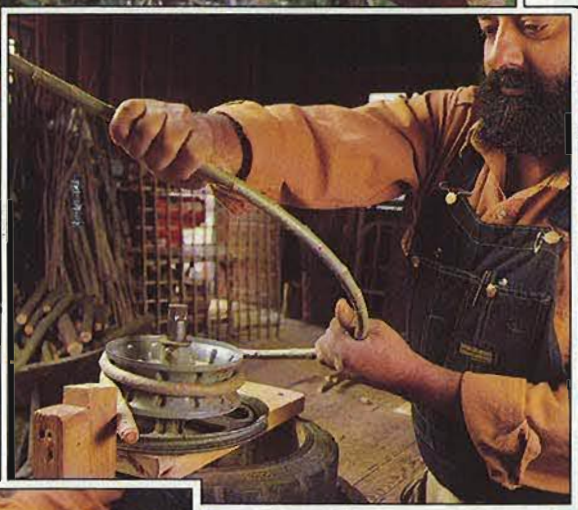
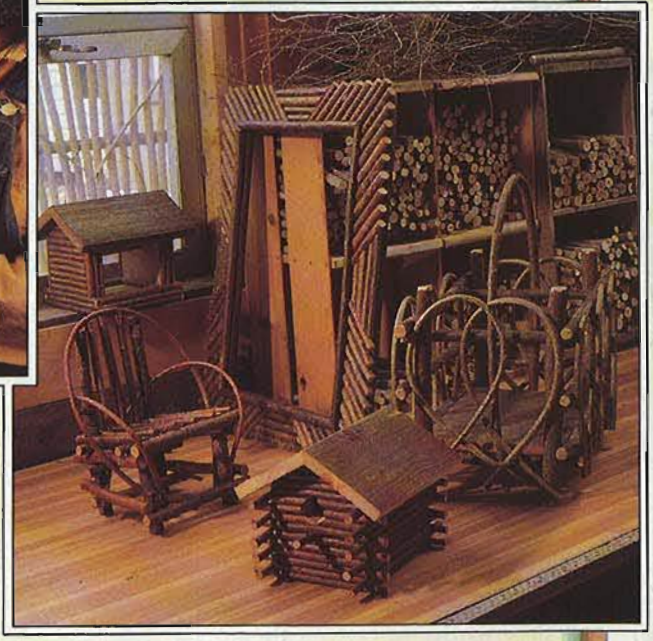
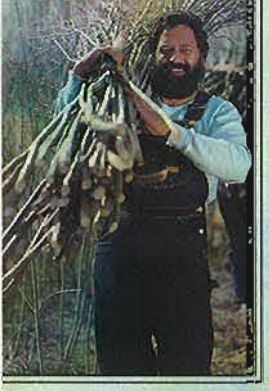


▲ An old wheel serves as a form around which Tehal bends willow to limber it up for bending.

◀ Trimming the bark on ends that will be exposed prevents peeling. Tehal's silver bracelet—that he's worn since childhood—identifies him as a Sikh, a follower of an Islamic Indian religion.



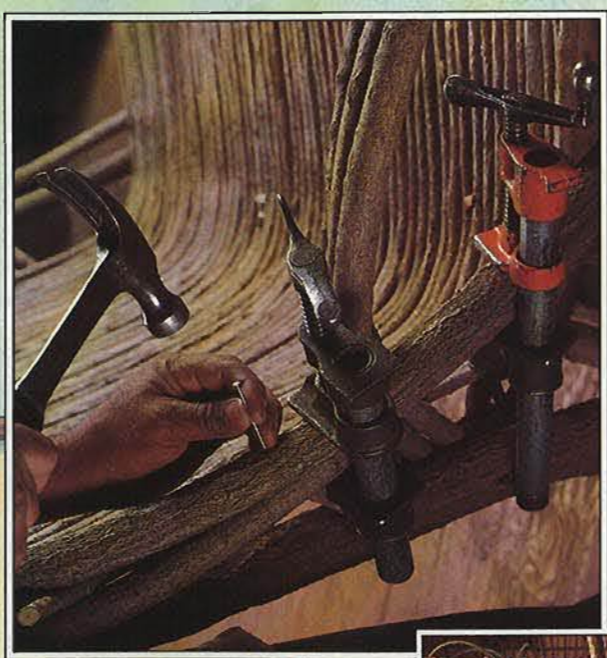
▲ Even the tiniest of willow sticks find a home as birdhouses and feeders, doll beds, mirror frames, and magazine racks. As the boxes behind indicate, Tehal sorts and stores sticks by size.



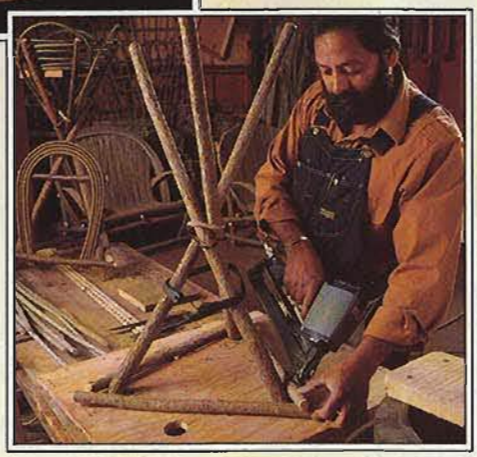
he unloads the truck. "I must have really fresh willow for seats, arms, and backs; otherwise, it is not going to bend," he comments. Then he adds, "Of course, I can rewet the wood in a bathtub, if it is skinny. And sometimes I have to do it when they dry out." Usually, Tehal won't let that happen.

At a crude worktop straddling a pair of sawhorses set up in the open, the willow worker snips off the slender top of each stick with pruning shears. Then, he crosscuts the willow to length. A yardstick nailed to the worktop and highlighting his most-used measurements shows him the length of various parts.

Tehal also does the chamfering outside. "I trim back the bark on the ends of exposed sticks with a butcher knife, so it won't catch on the floor or clothes and start the bark peeling," he explains. "It looks good, but it's really to keep the bark on that I hand-hew them."

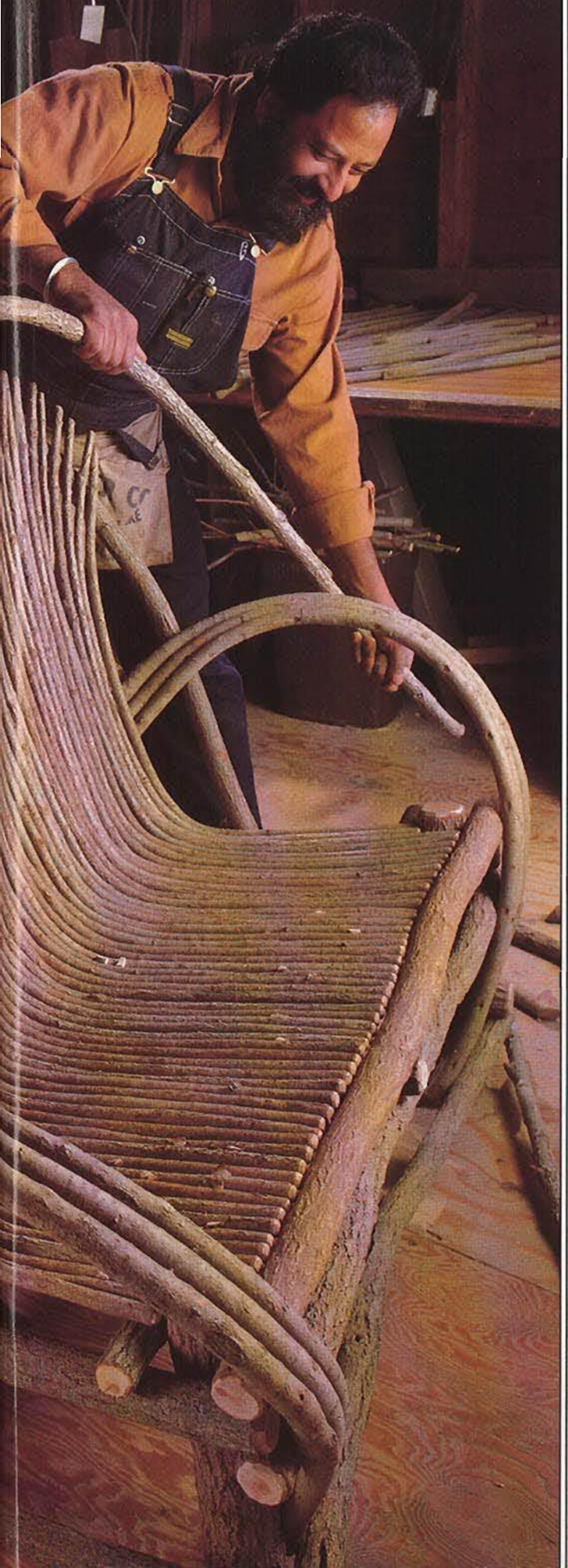


▲ Galvanized, ring-shanked nails won't rust or pull loose from the green willow. Tehal uses a pneumatic nailer to attach the multitude of sticks that make up a seat because it sinks the fasteners below the surface of the wood.



▶ Simple plywood jigs, such as this one with holes for spacing, help the willow worker hold subassemblies together while he fastens them. Here, with a nail gun, Tehal secures the top supports to the tripod of sticks that will become a planter.

▶ After one beaning by a whipping willow stick, Tehal now clamps an end before bending the length to final shape.



Bend-by-bend furniture

Tehal's line of worked willow includes chaise lounges, settees, chairs and rockers, tables, headboards, planters, magazine racks, mirror frames, birdhouses and feeders, and plant stands. In fact, if it can be made of willow, Tehal will make it. "I keep playing to see what I can come up with," he says.

Tehal likes to point out the sturdiness of his furniture. He prides himself on it. "At a show, a woman came up to me and said that she was afraid her kids would break my furniture," he says, a toothsome smile spreading across his face. "I told her, 'Ma'am, you can get up and jump on it if you want to. You can't hurt it.' "

To back up his words, Tehal bounds to the seat of a settee and, as if on a trampoline, bounces up and down. "I tell the people, 'If anybody can find better quality than this, I'll take my piece right back.' "

With care, Tehal shows why his willow furniture ranks as the best you can buy. "Some makers put the sticks on the seat 3" apart, then you need a cushion for them. These, you don't," he notes. "I also give a pitch to the seat so you don't slide off.

"And, my arms go all the way through down to the legs and behind to brace the whole piece. Others build in heart designs or other things, and I can do that, too, but I tell people that the sticks will be too far apart and make it uncomfortable and weak."

Quality construction shows up in the fastenings, too. Tehal sinks only galvanized metal into the wood. On large sticks, he prefers ring-shanked nails that won't pull loose. He attaches smaller sticks, such as those on a seat, to the frame with headless nails driven into the willow with a pneumatic nailer.

And although willow's bark has a natural tan beauty, Tehal enhances it. Two spray coats of Thompson's Three-Way Wood Protector preserves the wood as well as slows the seasoning process. Says Tehal, "Indoors, the pieces will last as long as we do. Outdoors, they should be sprayed with wood protector every season to fight mildew and bugs."

Even then, still-green willow furniture can spring a surprise on you—by sprouting! "A few years ago, I made a big willow headboard for us, but I got busy and left it out leaning against the garage." Tehal laughs remembering. "By the time I got back to it, the legs had sprouted roots right into the ground and there were little branches everywhere. It was truly living furniture!"

Wondering about willow?

For more information on Tehal's willow furniture, write him at: *The Wonderful Willow Works, 218 Main St., Belgium, WI 53013.*

Written by Peter J. Stephano Photographs: Wm. Hopkins

JEWEL OF A

With a fanciful spired stopper, this graceful perfume bottle towers above the ordinary. We think you'll find extraordinary enjoyment in turning the delicate details that give it that exotic look.

We used the following tools and supplies:

Stock

1½x1½ × 10″ turning square. (We used cocobolo.) Select well-seasoned stock for dimensional stability. Excessive warping after turning could make the stopper or vial inside difficult, if not impossible, to remove. (A few weeks after turning our container, we reamed out the hole in the urn to restore roundness by twisting the drill bit into it by hand.)

Lathe tools

Screw center
Revolving cone tail center
Spindle gouges, ⅛″, 13/64″, ½″
Roughing gouge
Skew, ½″
Parting tool, 1/16″

Lathe speeds

Roughing: 500-800 rpm
Finishing and sanding: 1,200-1,500 rpm

Print this article

Start with the urn. For your stock, saw a 4½″ length from a 1½ × 1½ × 10″ turning square. Write *top* on the sawed end. Mark the remaining part *bottom* on the sawed end, and set it aside to use later when you turn the stopper.

Locate the center on each end of the urn stock. Bore a ⅝″ hole 2½″ deep into the top. Drill a pilot hole for your lathe's screw center at the other end. Use a screw that extends ¾″ or less into the stock.

Attach the urn stock to the screw center, and mount on the lathe. Support the tailstock end with a revolving cone center in the ⅝″ hole. A short tool rest will come in handy for this project.

With a roughing gouge or other large gouge, round down the stock to 1⅜″ diameter. Mark the turning ¼″ and 3¼″ from the tailstock end. With a parting tool, cut in to ⅞″ diameter on the waste side of each line.

Following the diameters shown on the Full-Sized Template, turn the outside profile of the urn between the marks, with the top at the tailstock end (Step 1 in the Turning the Urn drawing). Shape it with a gouge or skew, maintaining a slight curve along the side.

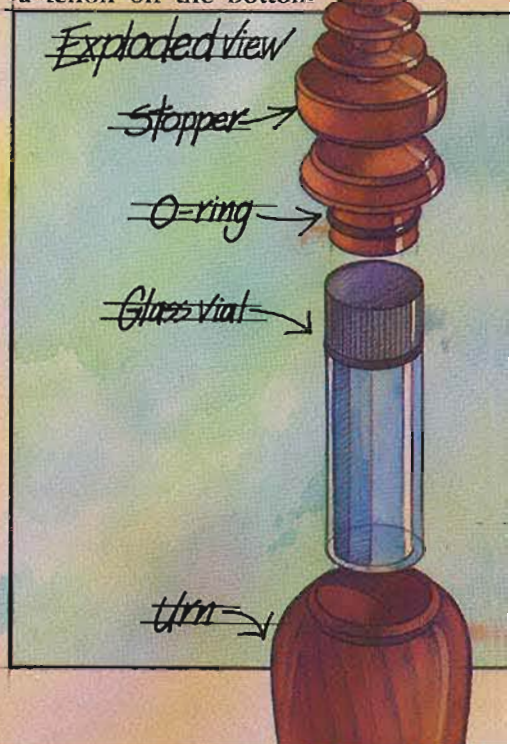
Slide the tailstock back, and then complete the bead around the opening. Sand and finish.

Part the urn from the lathe. Make the base slightly concave on the bottom by angling the tool tip slightly toward the top of the urn. Since the bottom will show whenever anyone tips the container to remove the vial inside, sand and finish it carefully.

Now, let's turn that show-stopping stopper

Mount the remaining part of the turning square between centers, with the bottom at the headstock. Round it to 1″ diameter.

At the headstock end, turn a cone tapering to ½″ diameter 1″ from the end of the stock. Starting there, form a tenon on the bottom



VIAL A fanciful flask for perfume

of the stopper, shown by Step 1 of the Turning the Stopper drawing. Measure the tenon as you work to ensure that it fits into the hole in the urn. It doesn't need to be a snug fit; an O-ring holds the stopper in place. Cut the O-ring groove 3/32"-wide and 1/16" deep where shown.

Then rough the turning to approximately the shape shown by the *red* line on the drawing. Using the Full-Sized Template, draw pencil lines on the roughed-out turning to lay out the features.

Form the profile with small gouges (we used 1/8" and 13/64" miniature gouges). A good approach is to bring the finial almost to final form early. Leave it about 1/4" diameter at the tip as you turn the stopper. This helps prevent breaking the fragile turning. Further stave off problems by taking light cuts as you develop the shapes.

Note that the sharp-edged discs vary in thickness as well as diameter. Turn square-edged discs of correct diameter and thickness, and then form the curved top and bottom surfaces with your small gouge. Cut the shallow step around the top and bottom of the large bead with a 1/16" parting tool.

Then, carefully complete the finial. Don't damage the fine point on the tip as you separate the waste from the turning.

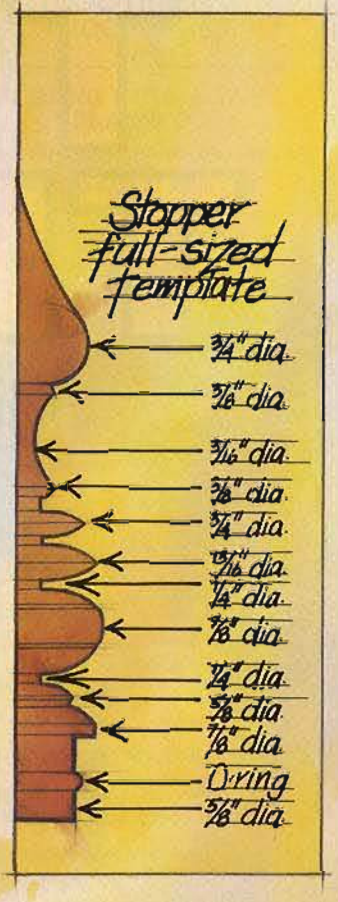
Finish the stopper to match the urn. Chamfer the bottom about 1/16", and part off the stopper.

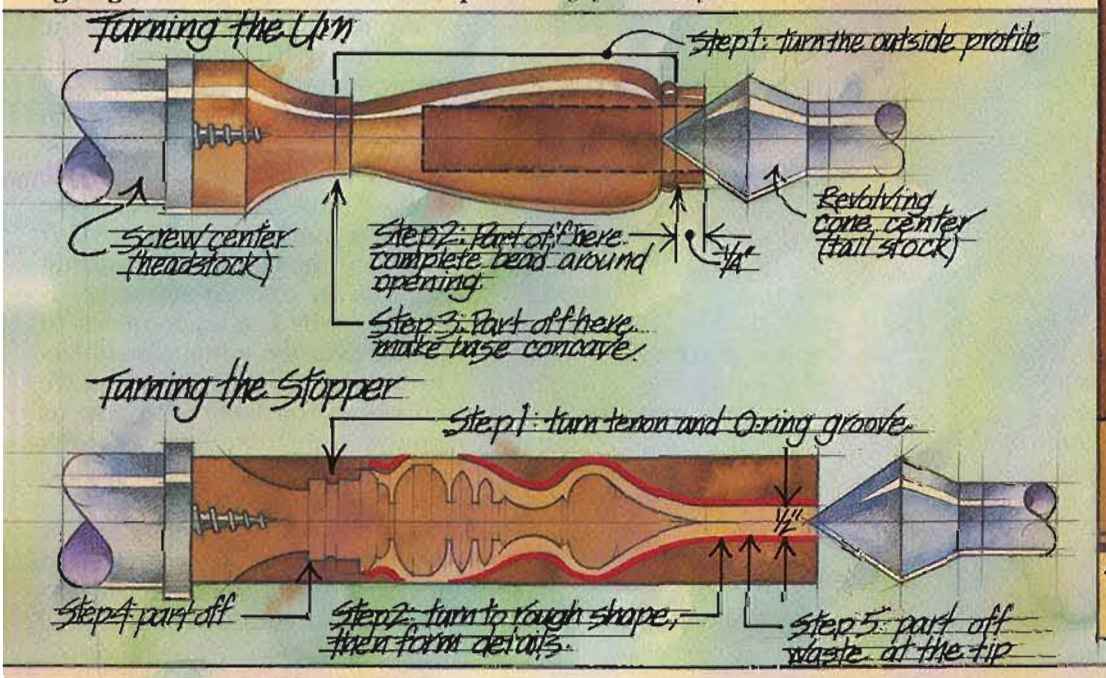
Roll a 5/8"-O.D. O-ring (available in the plumbing department at most hardware stores) into the groove around the tenon. Try the stopper's fit in the urn. If it's too loose, try an O-ring made of slightly thicker material or wrap a few strands of black sewing thread into the groove under the O-ring. Fix a lid that's too tight by sanding or filing the groove or changing to an O-ring of smaller-diameter material.

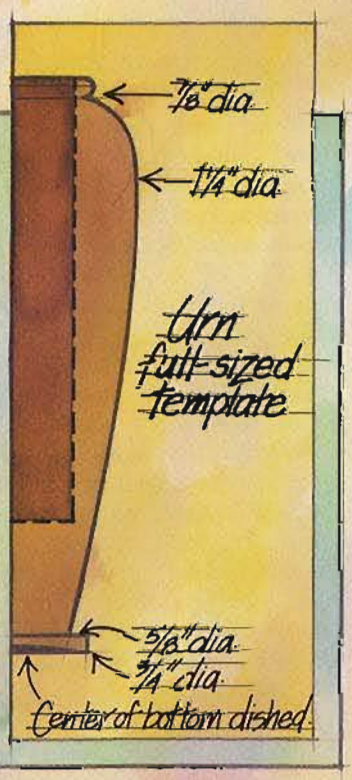
Buying Guide

Glass vial. Vial with screw-on lid, 1/8-oz. size., five for $3.50 ppd. in U.S. Add $9.95 for drill bit (fits 1/2" chuck). Craft Supplies USA, 1287 E. 1120 S., Provo, UT 84601 or call 801/373-0917

Project Design: ©Deborah Doyle
Illustrations: Mike Henry
Photograph: Wm. Hopkins







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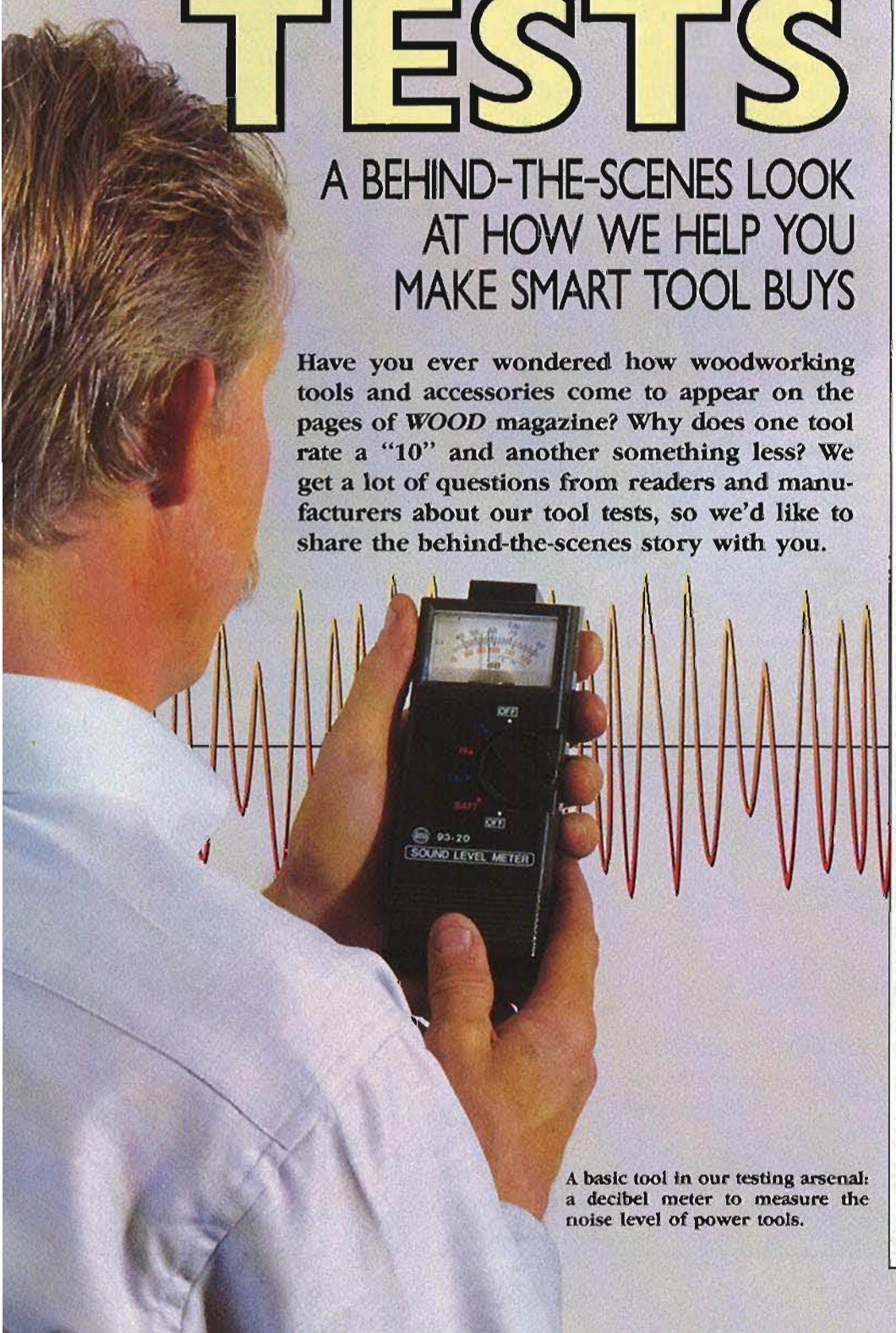
WOOD® MAGAZINE

TOOL TESTS

A BEHIND-THE-SCENES LOOK AT HOW WE HELP YOU MAKE SMART TOOL BUYS

Have you ever wondered how woodworking tools and accessories come to appear on the pages of *WOOD* magazine? Why does one tool rate a "10" and another something less? We get a lot of questions from readers and manufacturers about our tool tests, so we'd like to share the behind-the-scenes story with you.



A basic tool in our testing arsenal: a decibel meter to measure the noise level of power tools.

Why we take our tool testing so seriously

For many woodworkers, their tool collection may be the most valuable asset after their home and autos. (Although many of us would trade in our autos before our tool collection!)

With that much investment on the line, and a bewildering number of choices in the marketplace, we think there's a clear need for help in selecting those tools that offer the best value. After all, few readers have the time, energy, or resources to personally test every tool model before making a purchase. And today, an increasing number of woodworkers purchase their tools virtually sight-unseen through the mail, making our recommendations more important than ever.

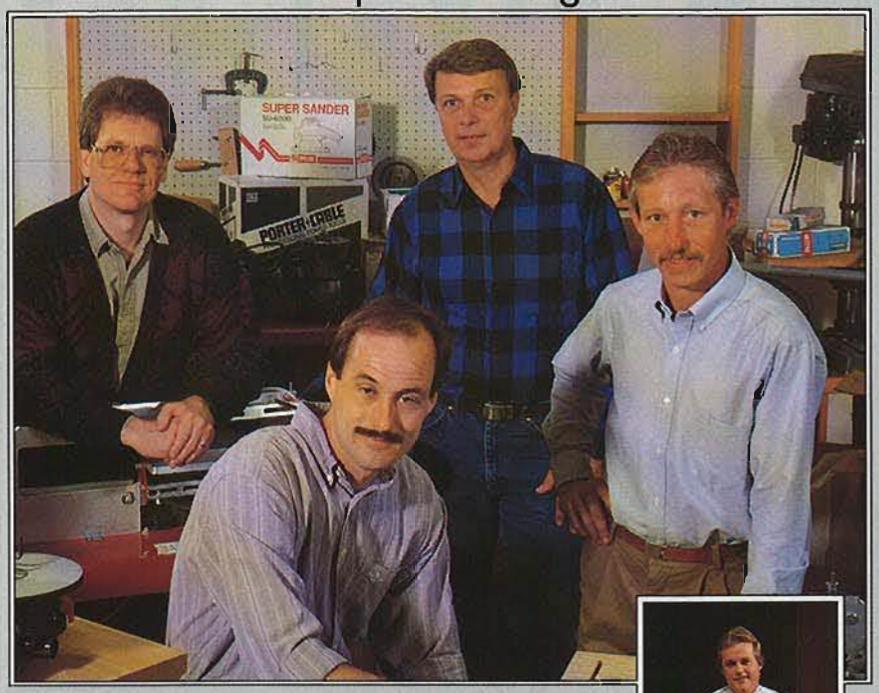
Our motto: Tell it like it is

Whenever you read a *WOOD* magazine tool review, *you can be sure that you're getting an honest evaluation not swayed by the interests of tool manufacturers.* We wouldn't have it any other way. After all, you pay a premium price for this magazine, and you deserve nothing less than a straightforward review that tells the good *and* the bad. At *WOOD*, the reader *always* comes first.

To assure you of honest evaluations, we insulate our tool testers from any pressure on the part of tool manufacturers. The products/techniques editor serves as the contact with manufacturers, except in rare instances when a tester needs to speak directly with a manufacturer to clarify a technicality. We encourage our testers to give us honest evaluations, and we don't change their recommendations for any reason.

And, we listen. Some of our best ideas come from readers, so please let us know your suggestions for articles on tool buying.

Meet the team that puts it all together



A face-to-face look at the *WOOD* magazine product-testing team *(from left)*: George Granseth, Bill Krier, Chuck Hedlund, and Bob McFarlin.

Technical illustrator Kim Downing *(right)* dismantles woodworking machines to help you understand them.

To make sure you get the best tool-buying advice, we've enlisted the help of an enthusiastic group of independent woodworking-tool experts. Their job: to thoroughly test, evaluate, and make buying recommendations for the tools that appear in *WOOD* magazine. Here's a look at each of the individuals in the photo *above*:

• ***George Granseth*** has been a technical consultant with *WOOD* magazine since the first issue in September 1984. In addition to his tool-testing responsibilities, George operates a five-man custom cabinetry shop.

• ***Bob McFarlin*** came on board in January 1991. Bob is an avid woodworker and co-owns an auto-body shop.

• ***Chuck Hedlund*** has tested tools since the August 1992 issue. He also builds some of the projects in this magazine. A former finish carpenter and production manager for a millwork shop, Chuck works as a self-employed cabinet and furniture maker.

• ***Bill Krier***—that's me. I serve as the team's quarterback in my role as products/techniques editor. For every product-buying article, I gather the latest tools and put them in the hands of our testers. After the completion of the tests, I write up the results, put together a comparison chart, and choose the necessary photos and illustrations. For an exact idea of how this system works, see the charted information *above right*.

• ***Kim Downing***, shown *above inset*, helps readers understand the complexities of power tools through his detailed technical illustrations. His work has graced the pages of this magazine since November 1984.

WOOD MAGAZINES TOOL-TESTING PROCEDURES

TESTING STRATEGIES PLANNED

• Tool-testing team meets regularly to:
- Determine type of tools that need testing.
- Select models to include in test.
- Formulate testing procedures.

MANUFACTURERS SEND REQUESTED TOOLS

•Products\Techniques editor requests product samples from manufacturers.

SIDE-BY-SIDE COMPARATIVE TESTING

•Tools assembled.
•Features and components examined.
•Identical tests performed on all models.

ASSEMBLING THE DATA

•Comparison chart with ratings and specifications developed.
•Photographs and illustrations created.
•Article produced.

A few words about "Products that Perform"

From time to time, we hear from readers who think that our "Products that Perform" department consists of paid advertisements. Nothing could be further from the truth. Here's why.

To find products for this section, we scour press releases, trade shows, and catalogs. When we come across something that seems unique, of good value, and, most of all, of usefulness to our woodworking audience, we order a sample for testing. Many of these products meet our expectations, but some do not. *Only the tools or accessories that pass our tests with flying colors will see the light of day in this publication.*

Written by Bill Krier
Photographs: John Hetherington

A CLEAR WINNER!

LEADED

PROVEN TECHNIQUES FROM THE
SHOP TESTED
WOOD MAGAZINE SHOP

Print this article

GLASS PANELS

If you've admired the striking beauty of leaded panels made of clear, stained, or beveled glass, you may be surprised at how easily you can make one. With our instructions and a modest investment in tools and supplies, you can create simple, but elegant, panels such as the one shown in the inset *left*. And, you'll find endless woodworking applications for such panels—as with the pendulum-clock project on *page 39*.

A handful of items to help you get started

For an investment of less than $150, you can buy the essential tools and supplies for making leaded-glass panels. Here's a listing and the approximate prices of the items shown *below*.

1. Whiting powder ($2 for 1 pound)
2. Glazing cement ($6 for 1 pound)
3. Round-H lead came, ¼" wide ($2.30 for a 6' length)
4. Came-stretching vise ($4)
5. Glass ($4–$10 per square foot for most types)
6. Horseshoe nails (75¢ per dozen)
7. Glass cutter ($4–$30; the least expensive models work fine, and the higher-priced versions have carbide wheels for longer life)
8. Cork-backed straightedge ($4)
9. Three-bladed pattern shears ($10)
10. Running pliers ($10)
11. Breaker/grozer pliers with ⅜"-wide jaws ($10)
12. Flush-cutting lead nippers ($7–$22)
13. Flux ($3 for 4 ounces)
14. Flux brush (35¢)
15. 80- to 100-watt soldering iron with 700° temperature control and ⅜"-wide tip ($40–$70)
16. 50/50 solder ($6 for a 1-pound spool)

If you live near a large city, you'll find these tools and supplies at a stained-glass store. Or, you can order them from the source in the Buying Guide on *page 38*.

Let's start by making our pattern

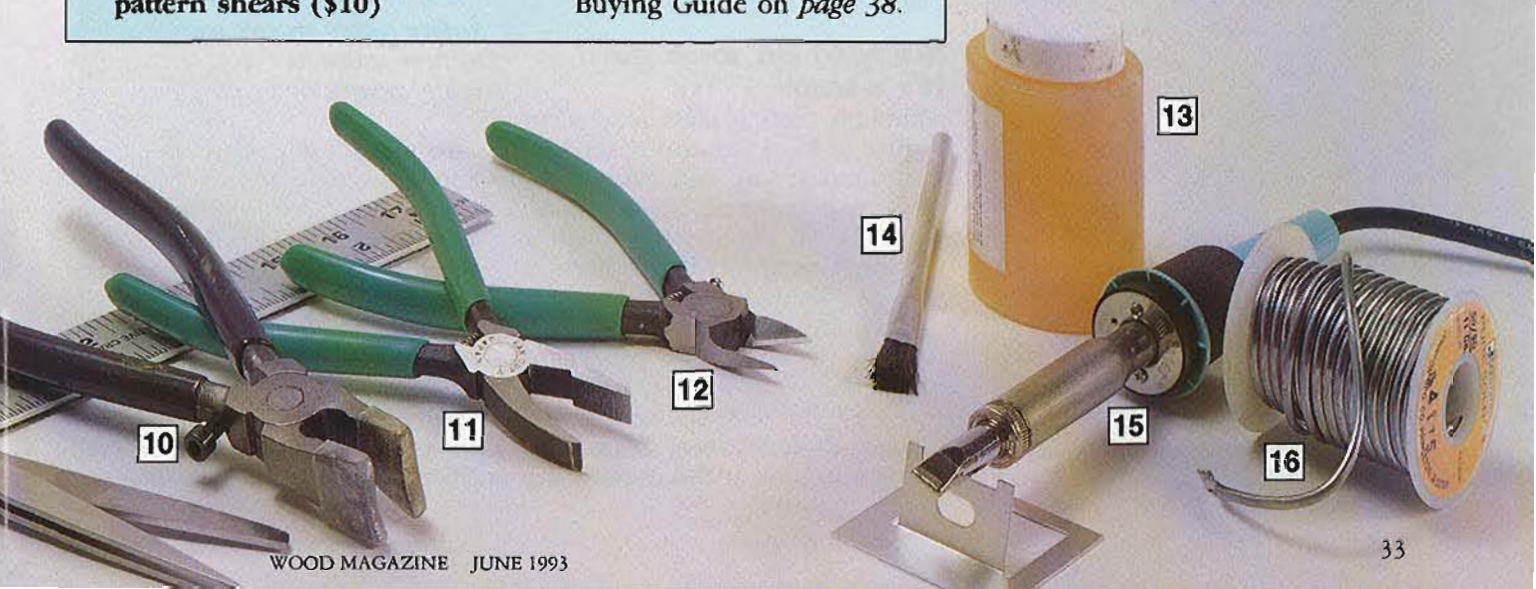
To keep things simple, we'll show you how to make a panel with glass pieces having straight edges only. As your skills improve, you may want to try free-form design using curved pieces of glass.

First, determine the exact width and height of your panel. Lay out these dimensions on a piece of paper (shown by the dashed line in the drawing on *page 34*), and mark solid lines ⅛" inside the dashed lines on all sides.

***Note:** We suggest you use H-channel lead came for the inside* and *border of your panel. This way, you can trim some of the lead from the border of the panel to help it fit into its frame. U-channel lead came does not afford you this option.*

Now, select the beveled pieces for your design. You can choose these pre-cut pieces in many sizes and shapes such as squares, rectangles, diamonds, and triangles. The catalog listed in the Buying Guide on *page 38* carries a full line of beveled glass.

Continued



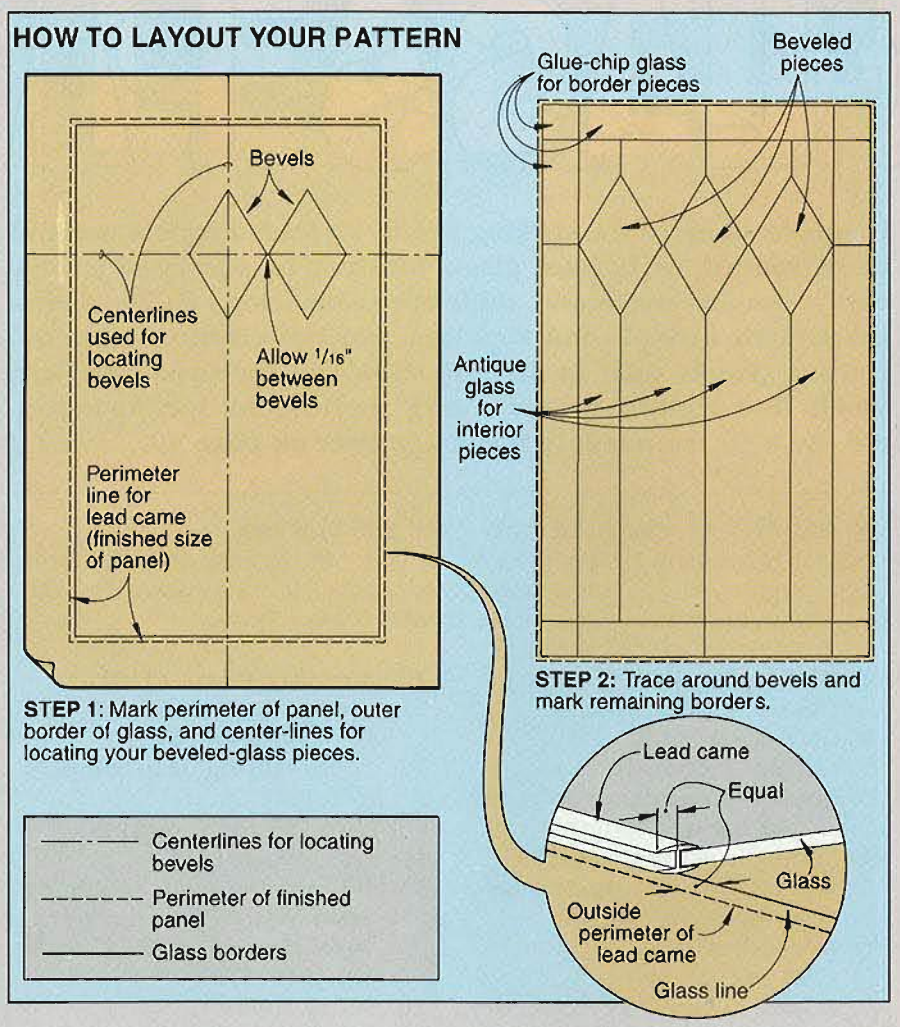
LEADED GLASS

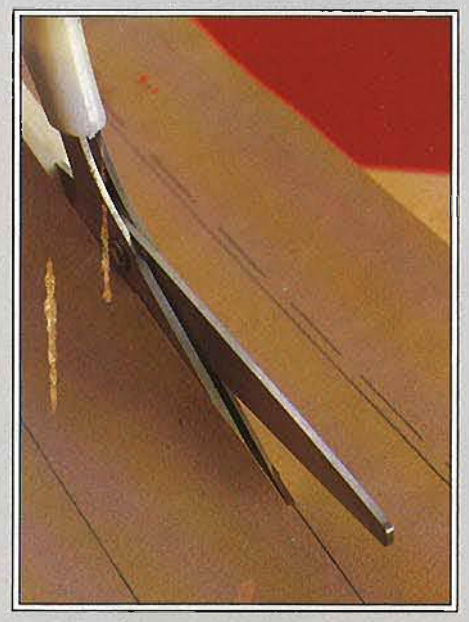
Draw centerlines for locating the beveled glass as shown *right*. Place and align the bevels on the paper, being careful to leave a 1/16" gap where they meet each other. With a sharp pencil trace around the bevels.

Now, lay out the rest of your pattern as shown *far right*. We refer to this pattern as the *glazing copy* because you'll use it to reassemble your glass pieces later.

Choose your glass for the rest of the pattern. We selected glue-chip glass, a heavily textured clear glass, for the border pieces of the finished panel on *page 32*. You also can substitute a colored glass for these border pieces as we did in the how-to photos throughout this article. For the interior pieces we chose antique glass with subtle distortions.

Now, with carbon paper make a *cutting copy* by tracing the solid lines of your glazing copy onto a piece of heavy paper. With the carbon paper still in place, number each pattern piece. Separate the two patterns, and cut the cutting copy into separate pieces with a three-bladed shears. As shown *below*, the shears remove 3/64" of your pattern to make room for the lead came. Cut carefully and in straight lines. Since your bevel pieces come precut, you must be sure to cut on the *outside* of the lines touching or surrounding the bevels (that's why we placed the bevels 1/16" apart).





Three-bladed pattern shears remove 3/64" of your pattern to allow room for the lead came.

Ready to cut some glass? It's a snap!

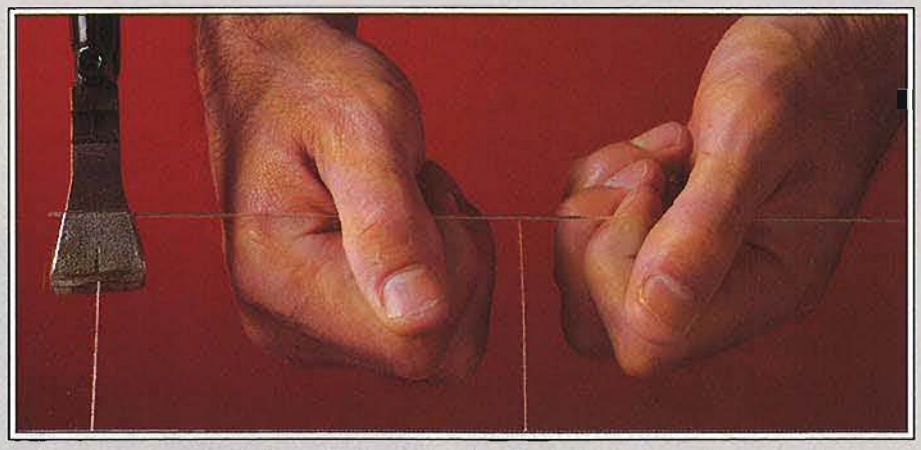
Although cutting glass may seem at first to be a hazardous activity, we found it safe and easy to do once we learned a few basic methods. To get started, attach a cutting-pattern piece to a piece of glass with rubber cement.

If you're working with a textured glass, attach the pattern to the smooth side of the glass. Done this way, the textured side of the glass will face away from you when you look at the front of the completed panel (the side with the bevels facing you). However, if you want the textured side of the glass to face you, just reverse the pattern before attaching it to the smooth side of the glass.

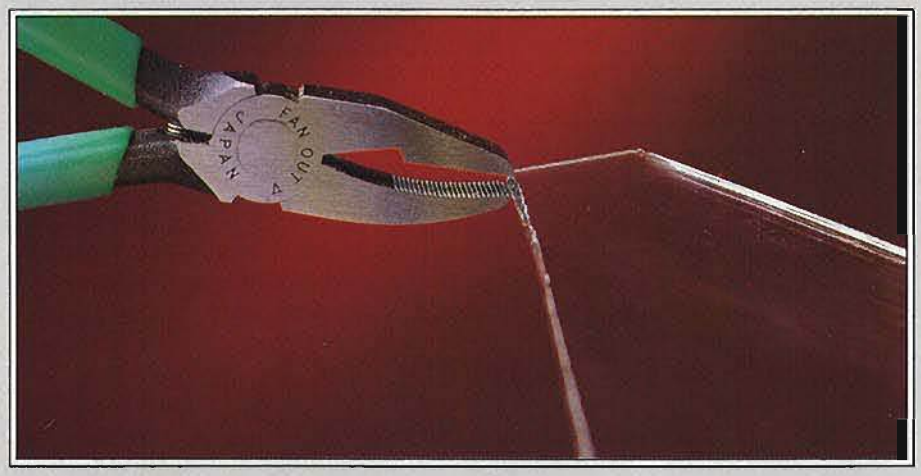
Safety Note: *Always wear eye protection whenever you cut, groze (chip away), or grind glass.*

To make a cut, score along one side of the pattern with your glass cutter. Be careful to keep your score line right alongside the edge of the pattern or just inside it. Use a straightedge to keep your long cuts straight. Now, grasp the glass on either side of the scoring line as shown *opposite page, top*.

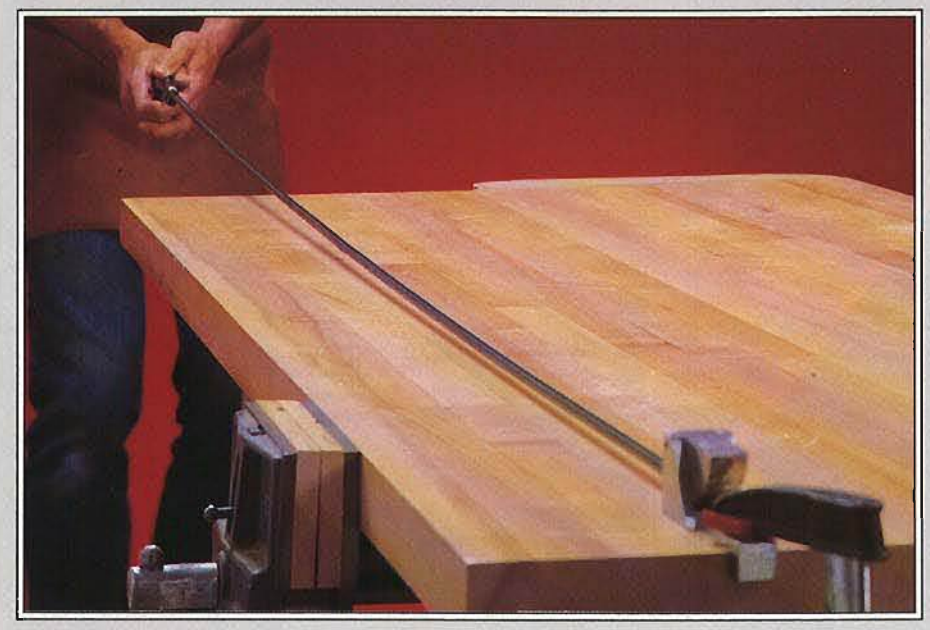
To break the glass, twist both wrists so your palms face upward. This may be hard to do when cut-



You can use a running pliers *(left)* or your hands to break glass along straight scoring lines. The pliers come in especially handy when cutting narrow pieces.

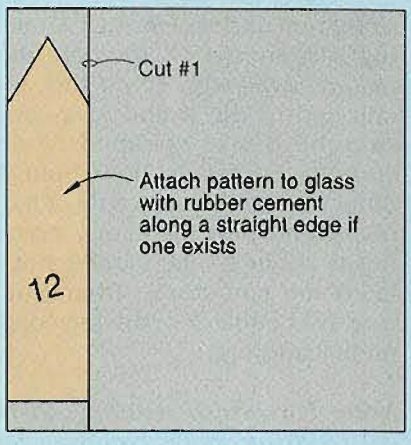


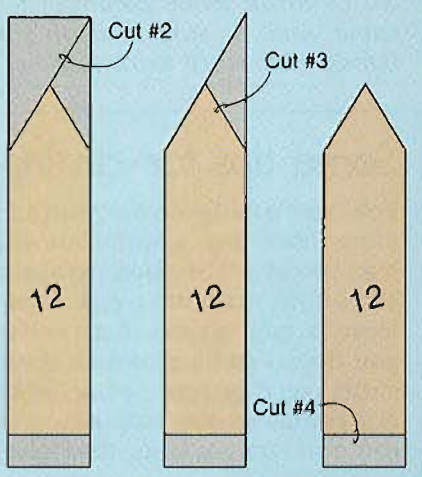
A breaker/grozer pliers helps you trim glass to fit within your pattern lines. Remember to keep the curved jaw down, and take small, controlled bites.



Hold the lead came firmly in a pair of pliers and stretch it 1" for every 1' of length. This quick procedure straightens the came and makes it stiff.

CUTTING GLASS: A TYPICAL SUCCESSION OF CUTS





ting narrow pieces, so at these times use a running pliers as shown on the *left* side of the photo *top*. These pliers have curved jaws that create the same pressure that your hands would otherwise. The drawing *above* shows a typical succession of cuts.

After cutting each piece, check to see if any portion of the glass extends past the pattern. If so, you'll need to carefully gnaw away at these protrusions with a breaker/grozer pliers as shown *left, middle*. When using this handy tool, remember to keep the curved jaw down.

It's time to assemble the glass and lead

To determine how much lead came you'll need, add up the length of all the solid pattern lines

Continued

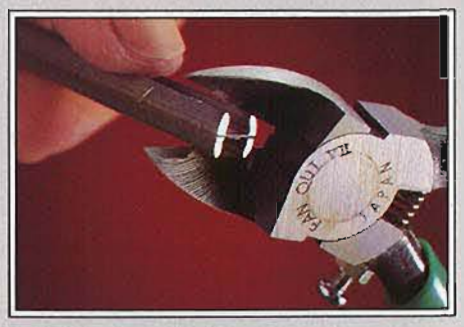
and add 15 percent. The came comes in limp, 6′-long strands. Before using the came, you need to straighten and stiffen it by stretching it as shown *on the bottom of the previous page.* To do this, lock one end of the strand in a came-stretching vise clamped to one end of your bench. Now, hold the other end solidly in a pair of hand pliers, and pull the came, stretching it about 6″. Be careful not to bend the taut came. Then, cut it into two equal lengths for convenient handling.

***Note:** For health reasons, do not eat or drink while handling lead came. And, be sure to wash your hands after every work session.*

Set the came strips aside, and staple your glazing copy to a flat piece of ¾″ plywood that's at least 2″ larger than the paper pattern on all sides. Position the plywood and pattern on a bench so the longest side of the panel faces you. Screw two ⅜″-thick, 1″-wide wooden cleats with straight edges along the dashed lines on the bottom and left side of the pattern. (If you're lefthanded, screw the cleats to the bottom and right side of the pattern.)

With your flush-cutting lead nippers, cut two lengths of lead that fit along the inside corner of the two cleats. (Because solder will cover this joint later, you don't need to miter the ends.) Cut these so they extend slightly past your outside pattern lines. To make a clean cut, hold the came and nippers as shown *below.*

Starting in this corner, tuck your first piece of glass into the channels in the lead came. Tap

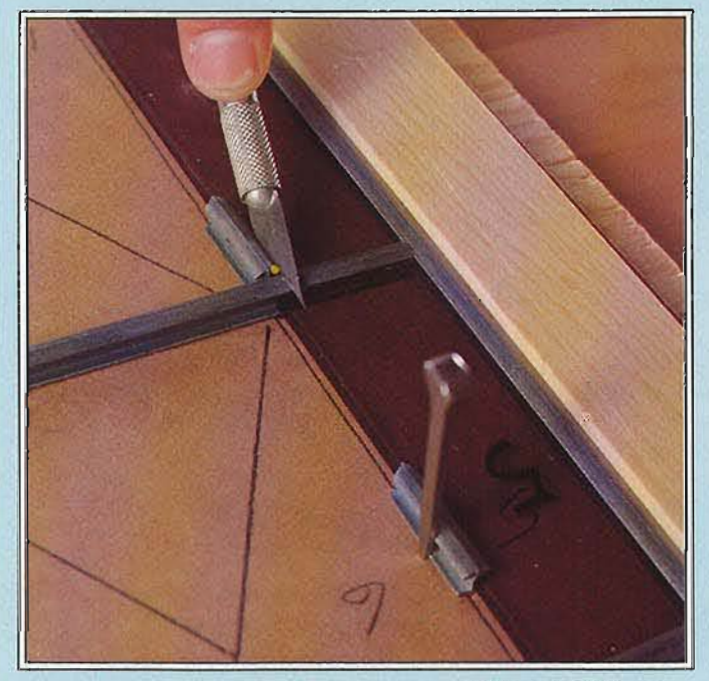


Position your lead came and nippers this way for clean cuts.

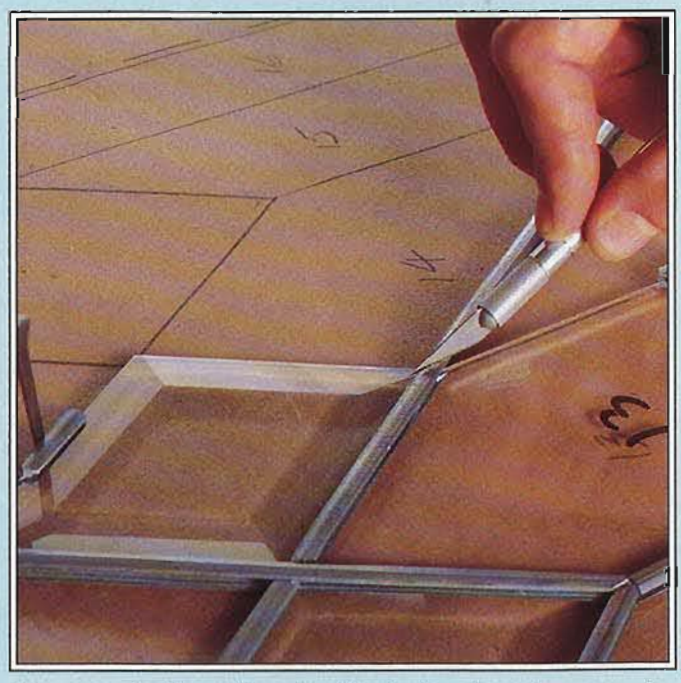
Some tips for cutting and positioning the lead came

For smooth-looking soldered joints later, you should cut your lead pieces so they butt up against each other without a gap. (Never leave a gap greater than 1/16″; if you do, you'll have to fill it with a small piece of lead before soldering.) And, be sure to position the came in straight lines throughout the panel. To ensure your success, follow these tips:

- Hold your glass and came in place with horseshoe nails as you work. Use scraps of came as cushions between the nails and glass. Also use scraps to help you mark the position of your cuts with a slim knife as shown *bottom left.*
- Since solder covers joints completely, you usually don't have to miter lead came at corners. But, diamond-shaped bevels do require mitered cuts. In our sample we cut the miters on the right and left corners of the beveled pieces by eyeballing the necessary angle and nipping the lead until it fit. At



Use lead scraps to accurately guide your cutoff marks. This scrap substitutes for a full-length piece of came that you cut later.

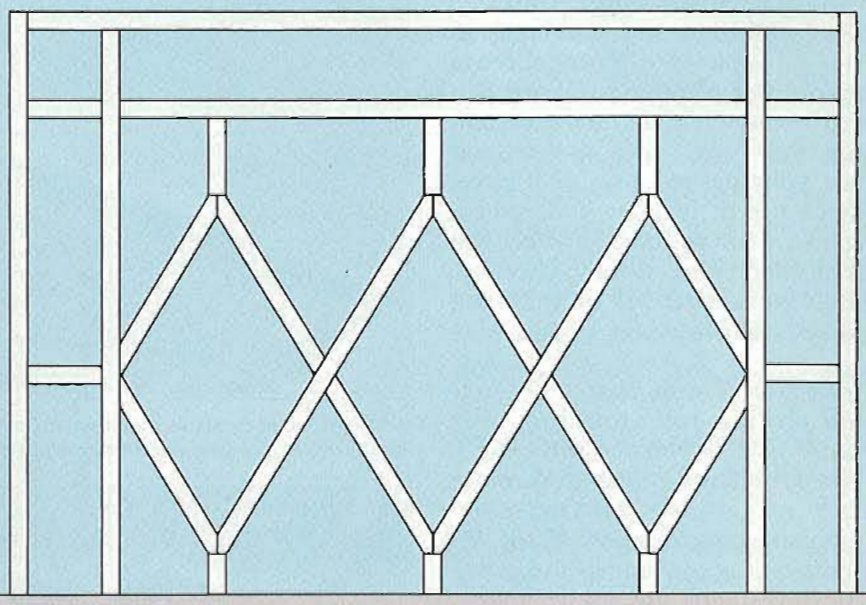


Align your lead cutoff mark with the bevels at the top and bottom of the diamonds.

this piece (and all others) to make sure it goes completely into the channel. Then, check that the piece does not go beyond your pattern lines. If so, trim away some glass with your breaker/grozer pliers, or by lightly touching the edge to a belt sander with 120-grit abrasive. Assemble your panel by working out from the bottom left corner toward the top right corner.

***Note:** Plan the joints of your inside lead pieces so your panel has as many long pieces as possible and a minimum number of joints. The drawing right shows how we worked out the joint placement in our sample panel.*

TYPICAL LEAD CAME JOINTS

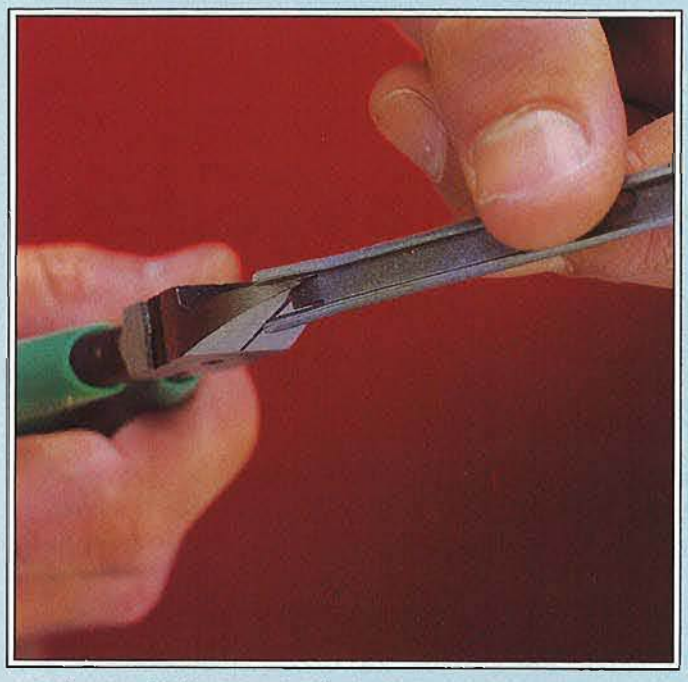


the top and bottom of the bevels, we marked the cut by following the line formed by the intersecting bevels as shown on *the opposite page, bottom right.*

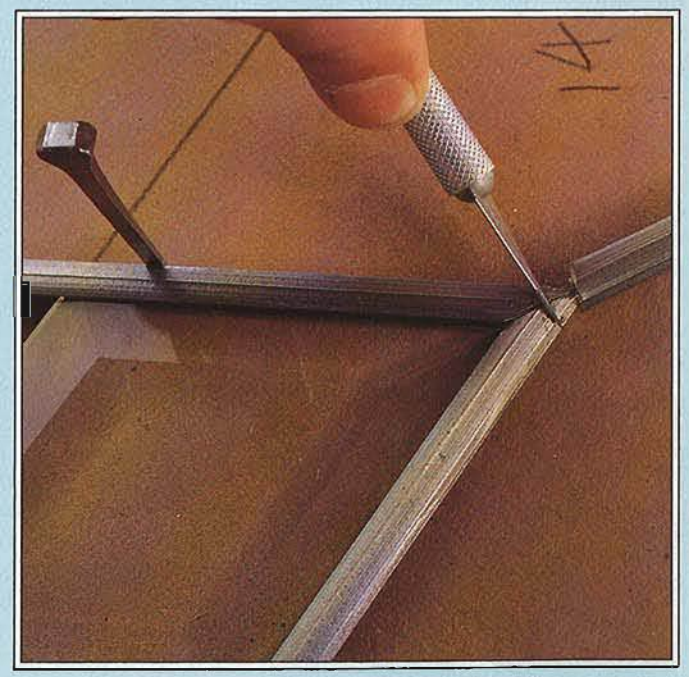
• When cutting miters of 45° or more, you may find that the "heart" of the lead came interferes with your nippers. In these cases, remove a short length of the heart as shown *below left.* To do this, cut along both sides of the heart, then bend the heart back and forth until it breaks off.

• To butt a piece of came up against the mitered joint at the bottom of a diamond-shaped bevel, make cuttoff marks on the mitered pieces as shown *below right.*

• Don't jam your glass and lead tightly together. A slight amount of play helps you adjust the pieces for proper alignment during soldering. However, don't leave so much space between the glass and came that you have visible gaps in the panel.



With your flush-cutting lead nippers, remove the heart of the lead came prior to cutting miters of 45° or more.



Mark and cut mitered lead pieces so they form clean, gap-free joints with butting pieces of came.

LEADED GLASS

Add solder for solid joints

With your glass and lead came in place, tack two more cleats around the perimeter of your pattern as shown *right*. Make certain that the panel does not extend past your dashed line. If it does, check the fit of your glass pieces against your pattern, and readjust as needed. Also, double-check to make sure that all of the lead pieces align in straight rows.

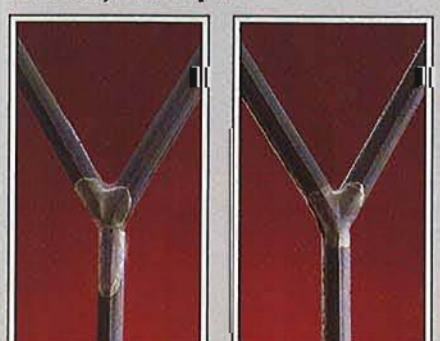
***Note:** You'll find that with time and practice your soldering technique will improve greatly, so it pays to practice on scrap came.*

Brush some flux on all of the joints on the top side of the panel. The flux helps the solder adhere and flow into the joint.

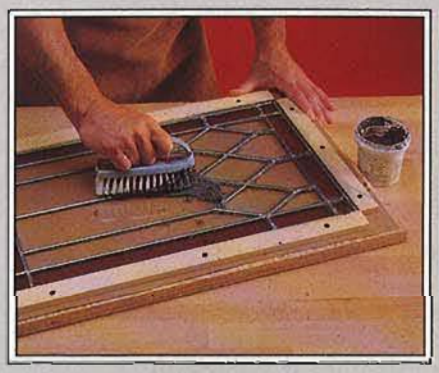
When your soldering iron becomes hot enough to melt the solder, hold the solder between the joint and the soldering iron as shown on *page 32*. The iron will quickly melt the solder. Hold the soldering iron on the joint for two or three seconds, until the solder flows evenly across the joint. You may need to move the iron in a small circular motion to smooth the solder, but be careful not to spread the solder more than ¼" past the joint. Then, lift the iron straight up and off the joint.

Use no more solder than necessary for a smooth joint. (See the photo *below* for examples of well done and poorly executed soldered joints). Try to keep the joint as flat as possible. To fill small gaps, turn the tip of your soldering iron vertical before lifting it off the gap.

Strive for flat, smooth, small, and unobtrusive solder joints such as the example at *right*. Shown at *left* is a poorly soldered joint. Oops!



Add two more cleats to make your project square and secure prior to soldering. (Remove the horseshoe nails before positioning the cleats.)



Work the glazing cement under the came with a scrub brush.

Scrub the whiting into your panel to clean and polish it.

When you finish soldering, wipe away all excess flux. Temporarily remove two cleats and flip the panel over. Flux and solder the joints on the other side. Check both sides to make sure you didn't miss any joints.

The final steps: glazing and cleaning

To prevent the glass from rattling within the lead channels, and to weatherproof the panel, you need to work glazing cement into the space between the lead came and the glass. To do this, apply a glob of cement to the panel and work it under the lead, using a scrub brush as shown *above left*.

After glazing both sides, sprinkle some whiting (powdered chalk) onto one side and work it around with a clean scrub brush as shown *above right*. The whiting will pick up the excess glazing cement and leave the glass looking smooth and polished. Repeat this procedure on the other side of the panel. Lay the panel on a flat surface and let the cement cure for about 24 hours.

With a toothpick or other pointed object, remove the excess cement from along the edges of the lead came. Finally, lightly sprinkle some whiting on the panel and scrub it again with a clean brush. You're done! (For information on how to install leaded glass panels in a wood frame, see the instructions in the Pendulum Clock project on *page 42*).

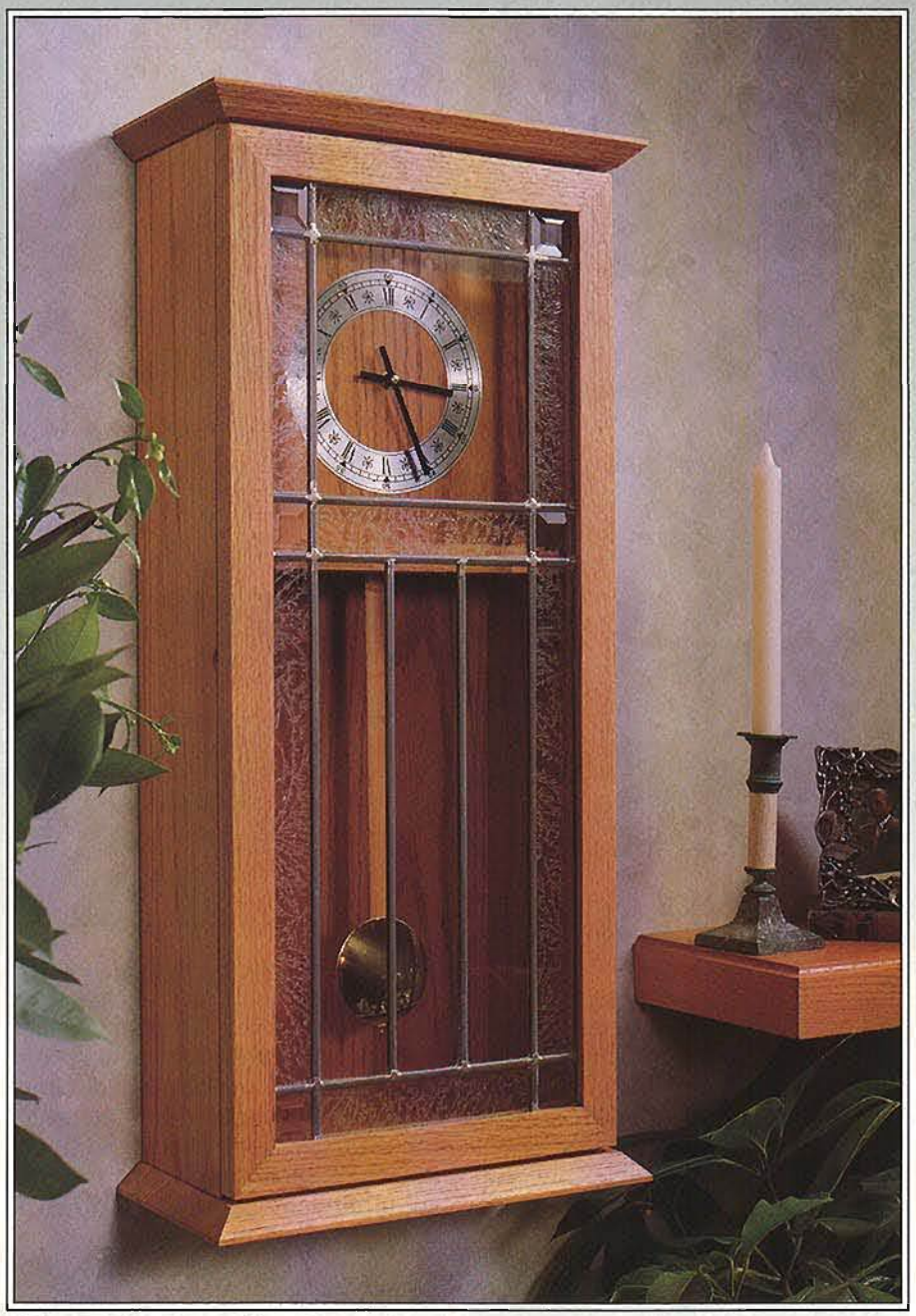
Buying Guide:

For a complete catalog of leaded-glass supplies, including tools, glass, books, videos, kits, and designs, contact Delphi Stained Glass, 2116 E. Michigan Ave., Lansing, MI 48912; 800/248-2048.

Written by Bill Krier with Jim Downing Technical consultant: Jeff Kolker
Photographs: Hopkins Associates Drawings: Jim Downing; Kim Downing

WORTH-EVERY-MINUTE

WALL CLOCK



Build this statement in leaded glass

Print this article

Now that you've read our leaded-glass technique article on the preceding pages, why not practice what we've preached by building this beautiful wall-mounted pendulum clock? You'll be surprised how easy the whole project goes together (we've kept the clock and glass-panel construction simple on purpose). See the Buying Guide at the end of the article for our source of supplies.

***Note:** See the preceding techniques article for information on assembling the glass-panel insert used in the door of this clock.*

Let's start with the solid oak clock case

1 From ¾" oak stock, cut the clock case sides (A) and upper and lower members (B) to the sizes listed in the Bill of Materials.

2 Cut or rout a ¾" rabbet ¼" deep across both ends of each side piece (A). Cut a ¼" rabbet ½" deep along the back inside edges of the sides (A). See the Exploded View drawing for reference.

3 Sand the inside surfaces of parts A and B. Glue and clamp the pieces. Check for square and that the *front* edges are flush.

4 Cut the top and bottom pieces (C) to size.

5 Tilt your tablesaw blade 45° from vertical, position your fence, and cut a chamfer along the front and side edges of the top and bottom. Use a pushblock for stability and to minimize grain tear-out. Sand the chamfers to remove the machining marks.

6 Center the top and bottom pieces (C) side-to-side on the top and bottom of the clock case.

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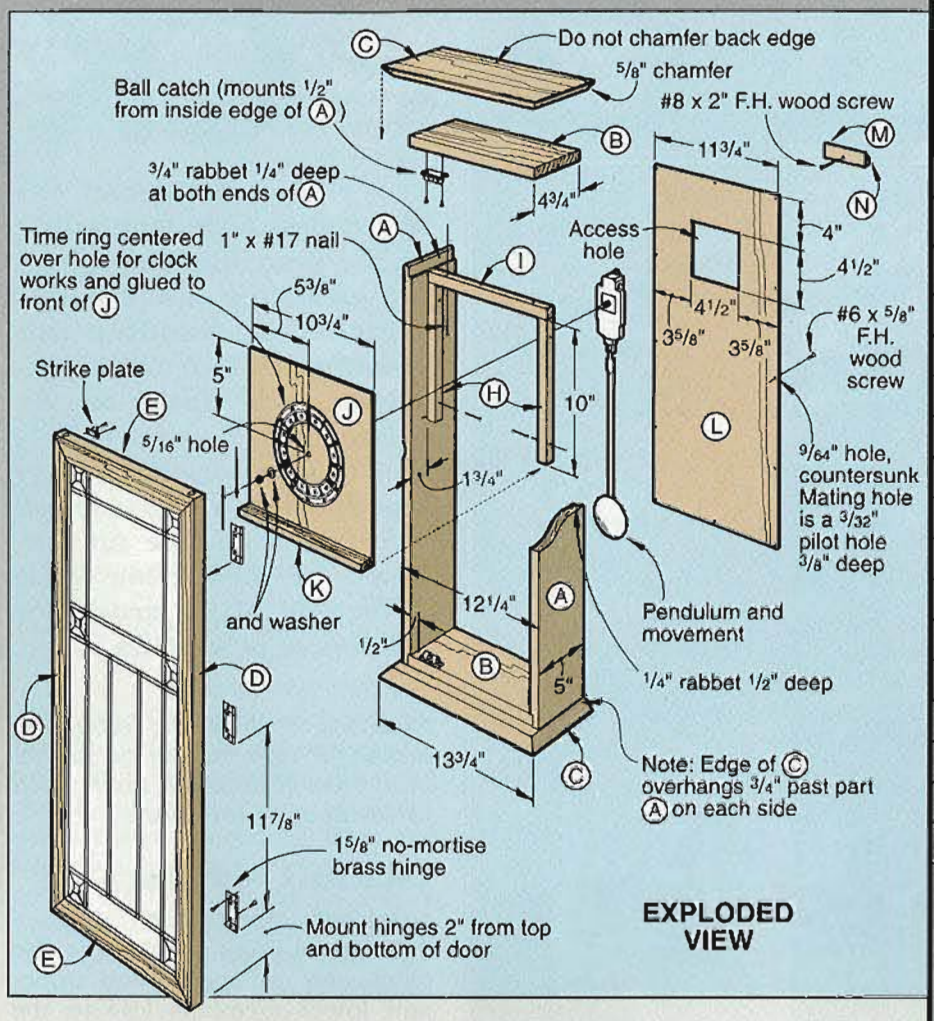


Bill of Materials

Part	Finished Size T	Finished Size W	Finished Size L	Matl.	Qty.
CASE					
A sides	3/4"	5"	28"	O	2
B U & L members	3/4"	4 3/4"	11 1/4"	O	2
C top & bottom	3/4"	6 1/2"	13 3/4"	O	2
DOOR					
D* stiles	3/4"	1 1/4"	27 3/4"	O	2
E* rails	3/4"	1 1/4"	12 1/4"	O	2
F stops	3/16"	1/4"	25 3/4"	O	2
G stops	3/16"	1/4"	10 1/4"	O	2
CLOCK FACE ASSEMBLY					
H supports	3/4"	3/4"	10"	O	2
I support	3/4"	3/4"	10 3/4"	O	1
J face	1/4"	10 3/4"	10 3/4"	OP	1
K ledge	3/4"	1 1/4"	10 3/4"	O	1
L back	1/4"	11 3/4"	28"	OP	1
HANGING BLOCK					
M front	3/8"	2"	4"	O	1
N back	3/8"	1"	4"	O	1

*Initially cut parts oversized. Then, trim to finished size according to the how-to instructions.

Materials Key: O–oak, OP–oak plywood

Supplies: 3/4" × #17 brads, 1" × #17 nails, 1/4" dowel stock, #8 × 2" flathead wood screws, #6 × 5/8" flathead wood screws, stain, finish.

Then, with the back edges flush with the sides (A), glue and clamp them in place.

Now, let's construct the door frame

1 Cut the door stiles (D) and rails (E) to size plus 2" in length.

2 Cut or rout a 1/4" rabbet 9/16" deep along the back edge of each piece. See the Door drawing and accompanying Glass Stop detail for reference.

3 Miter-cut the stiles and rails to length. Glue and clamp the pieces together, checking the door frame for square and that it lies flat.

4 Using a doweling jig for alignment, drill a 1/4" hole in each corner of the door frame where shown on the Door drawing.

5 Cut four pieces of 1/4" dowel stock to 1 5/8" long. Sand a chamfer on one end of each dowel. Apply glue and insert the dowels—chamfered end first—into the dowel holes just drilled. Later, trim the protruding ends of the dowels flush with the edges of the door frame.

6 Assemble the glass insert for the door using the method described in the techniques article and the Leaded-Glass Pattern shown on the *opposite* page.

7 Cut the glass stops (F, G) to size, miter-cutting the ends.

Next, machine the remaining pieces

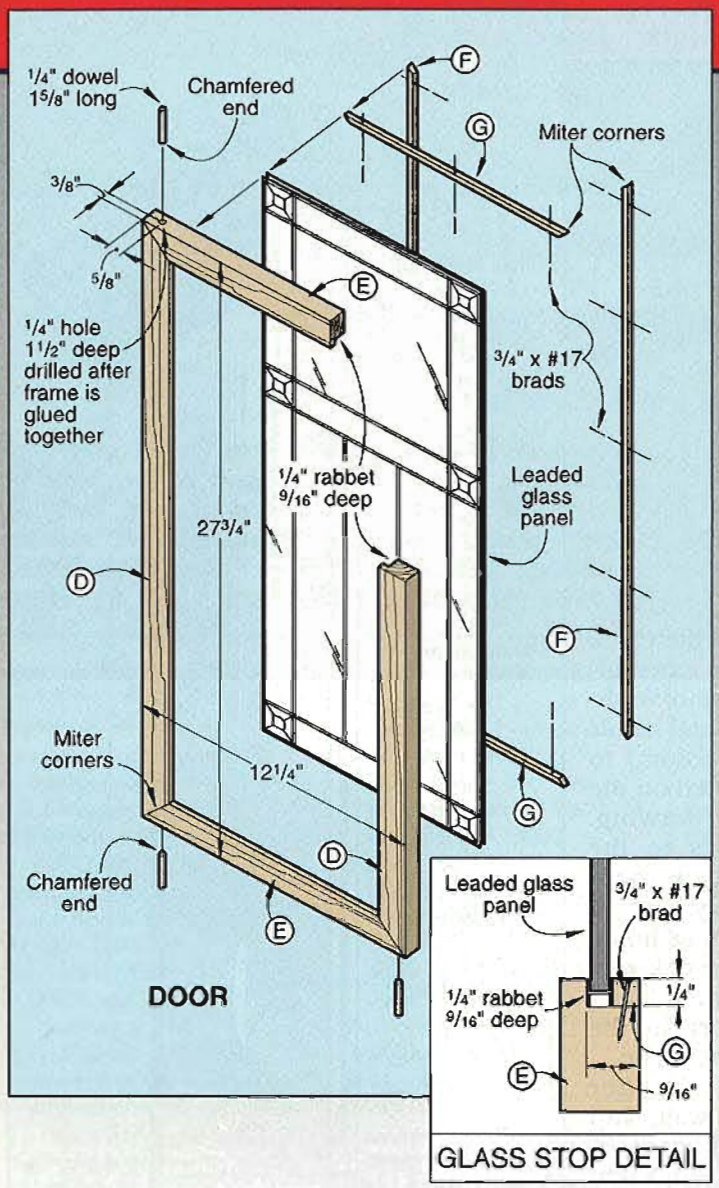
1 Cut the clock-face supports (H, I) to size. Drill pilot holes, then glue and brad them to the inside of the clock case where shown on the Exploded View drawing. Immediately remove excess glue.

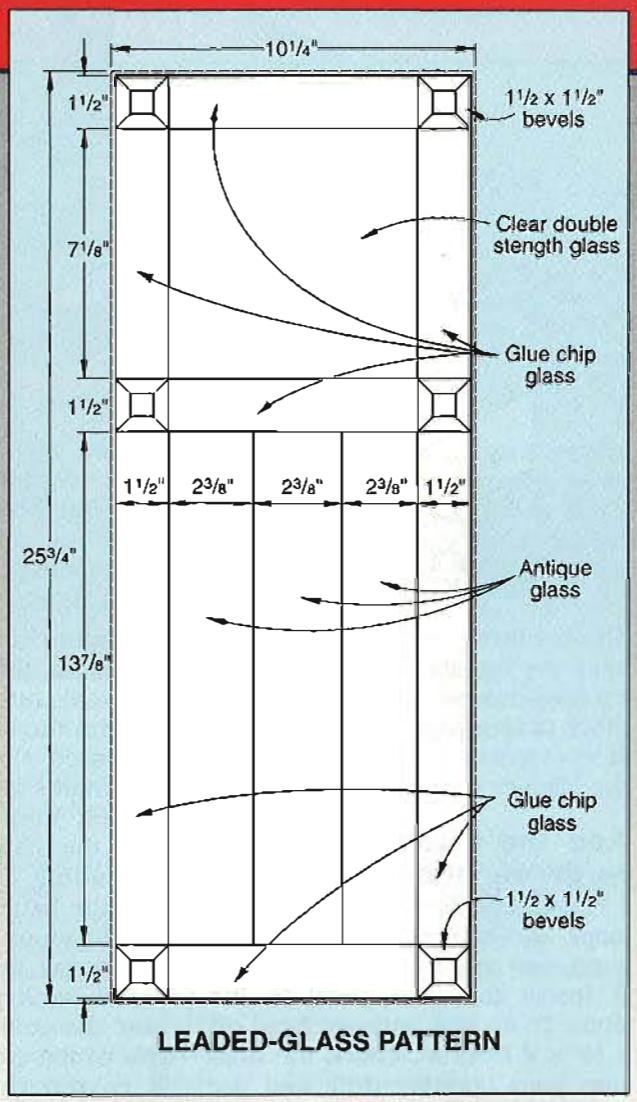
2 From 1/4" oak plywood, cut the clock face (J) to size. Check the fit in the opening. Then, mark the shaft hole centerpoint where dimensioned on the Exploded View drawing, and drill the shaft hole through the face. Check the fit of the clock shaft through the hole. Some movements might require a different sized hole.

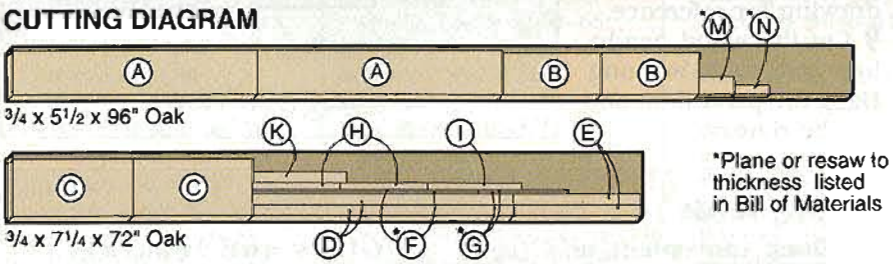
3 Cut the clock-face ledge strip (K) to size, and glue and clamp it to the front of the clock face.

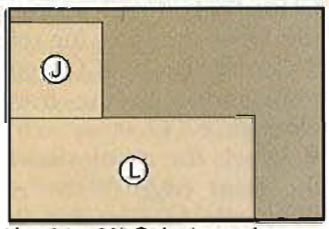
4 Glue and clamp the clock-face assembly (J, K) to the supports (H, I).

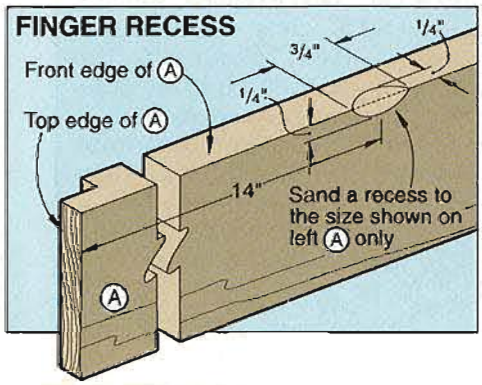
5 Mark the finger recess on the front outside edge of the left-hand side piece (A) where shown on the Finger Recess drawing. Wrap sandpaper around a 1"-diameter











Wrap sandpaper around a 1" dowel and sand the finger recess to shape.

dowel, and sand the recess to shape as shown in the photo *left*. **6** Measure the rabbeted opening, and cut the clock-case back (L) to size. Lay out the 4½"-square access opening, drill a blade-start hole, and cut the opening to size. **7** Cut the clock-hanger block parts (M, N) to size. Drill mounting holes and glue and screw the parts. To help keep the completed

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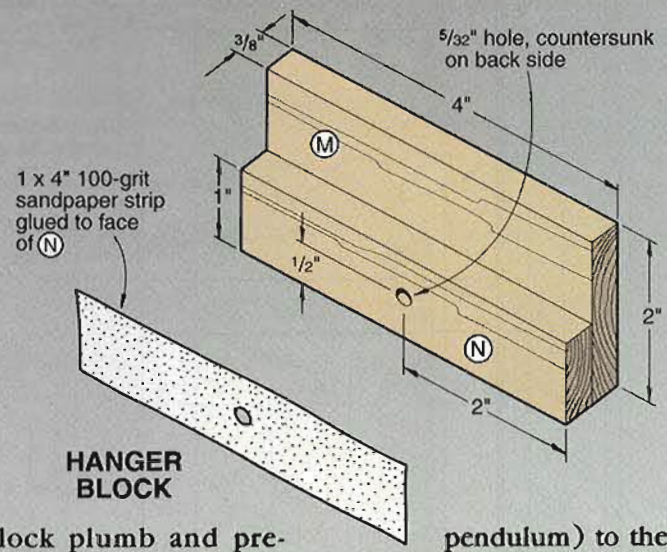

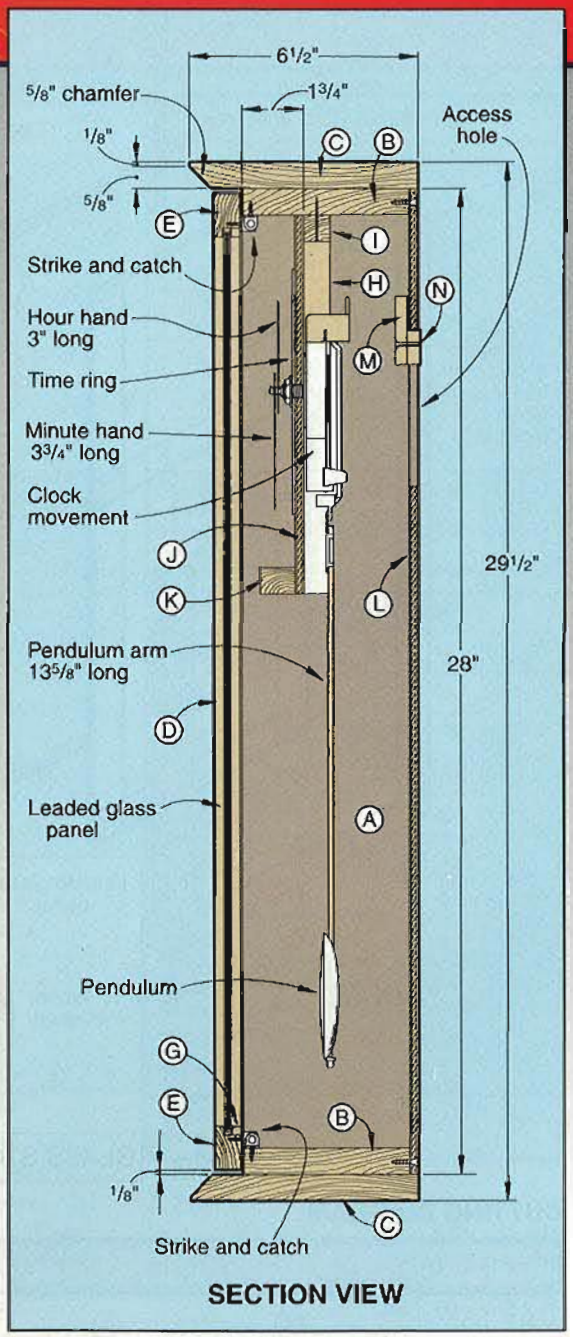

SECTION VIEW

clock plumb and prevent the hanger block from rubbing against the wall, adhere a piece of sandpaper to the exposed face of part N where shown on the Hanger Block drawing.

Add the finish, glass panel, hardware, and movement

1 Finish-sand the clock case, door, stops, and back panel. Stain as desired, and apply a clear finish.

2 Install the glass panel in the door. To do this, snip the head off a ¾"×#17 brad, chuck the brad into your portable drill, and use the brad as a bit to drill angled pilot holes through the glass stops and into the door frame. See the Glass Stop detail accompanying the Door drawing for reference.

3 Center and brad (or epoxy) the timing ring to the front of the clock face (J).

4 Attach the no-mortise hinges to the front edge of the right-hand door stile (D) where dimensioned on the Exploded View drawing. Then, fasten the hinges to the door stile. When positioning the door for attaching the hinges to the clock case, leave an ⅛" gap between the clock case and top and bottom of the door.

5 Attach the ball catches to the clock case and mating positions on the back of the door.

6 Stick the clock shaft through the hole in the clock face (J), and fasten the movement (minus the pendulum) to the clock face with the external-threaded nut and washer. Trim the metal hands (we used a scissors) to the lengths stated on the Section View drawing. Add the hands to the protruding clock shaft. Add the battery.

7 Drill mounting holes, and screw the oak plywood back panel (L) into the rabbet in the rear of the clock case.

8 Fasten the hanger block to the wall, and slip the clock onto it. See the Section View drawing for reference.

9 Cut the wood pendulum arm to 13⅝" long. Hang the pendulum and set the time.

Buying Guide

• **Clock movement and hardware.** Mini-quartz movement with wood pendulum and brass disc, etched time ring, straight hands, antique brass no-mortise hinges, and two polished-brass ball catches. Stock no. 4910, $29.95 plus $4.95 shipping and handling per order. Turncraft Clocks, Inc., P.O. Box 100, Mound, MN 55364-0100. Or call 800/544-1711 to order.

• **Glass and leading.** 6—1½×1½" beveled-glass squares, 1—10×15" clear semi-antique glass, 1—18×24" single chip glass, 1—8×10" clear double-strength glass, 3—6' pieces ¼" RH lead came. Kit no. 8030WM. $28.95 ppd., Delphi Stained Glass, 2116 E. Michigan Ave. Lansing, MI 48912. Or call 800/248-2048 to order.

Produced by Marlen Kemmet Project Design: Cary Stage Photographs: John Hetherington Illustrations: Kim Downing

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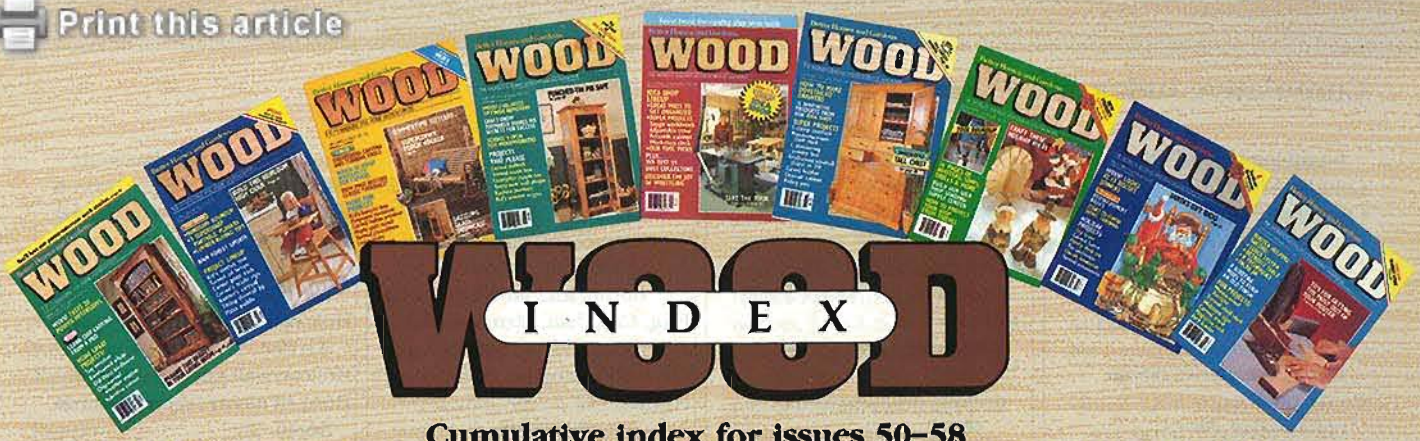

WOOD INDEX

Cumulative index for issues 50–58

If you save back issues of WOOD® magazine, this index will help you quickly find articles in issues 50–58. We kept it simple. For instance, after the listing "Baskets, split-ash," you'll find the numbers 54:35–39. This means the article appears in issue 54, pages 35–39. The in-magazine index for issues 1–8 appeared in issue 9, 9–16 in issue 17, 17–24 in issue 25, 25–32 in issue 34, 33–41 in issue 43 and 42–49 in issue 52. Watch for the advertisement for our all-new cumulative index in an upcoming issue.

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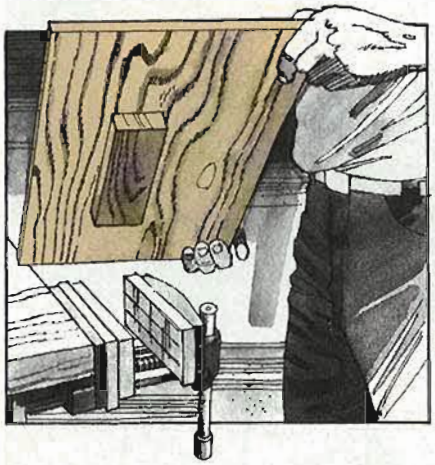
Print this article

HOW TO CLAMP TRICKY MITERED MOLDINGS

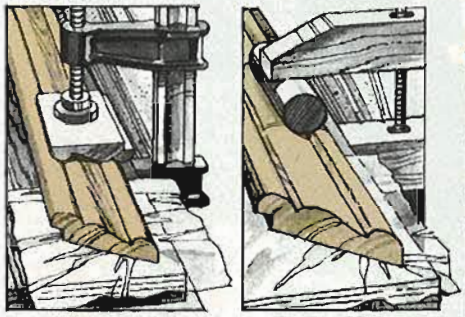
At one time or another, you'll probably face a mitered joint that seems to defy assembly. As an example for this article, we came up with a doozy: an intricately shaped picture molding with precious few flat surfaces for clamping. Here's how we make quick and simple work of this challenging situation.



1 First, you need to build an auxiliary work surface like the one shown *above*. We assembled ours from a 16×24" piece of ¾" plywood and a cleat of scrapwood screwed to its underside. With the cleat secured in your vise, this work surface gives you greater working freedom to take on the following steps.

***Note:** Before you get to the following steps, dry-assemble your mitered workpieces to ensure that they form a square frame without gaps at the joints.*

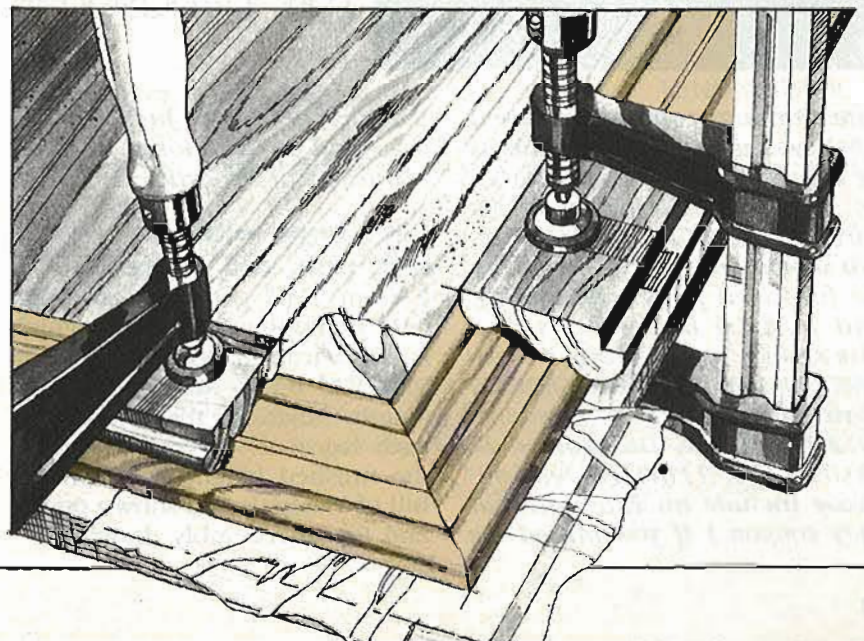
2 Now, position and clamp a scrap piece of your molding *face side down* and *rabbet side out* as shown *top left*. This clamping block protects your



molding and provides a flat area for your clamp's pad to rest on. This usually does the trick, but if the scrap of molding slides off the workpiece, then you need to try a different clamping block.

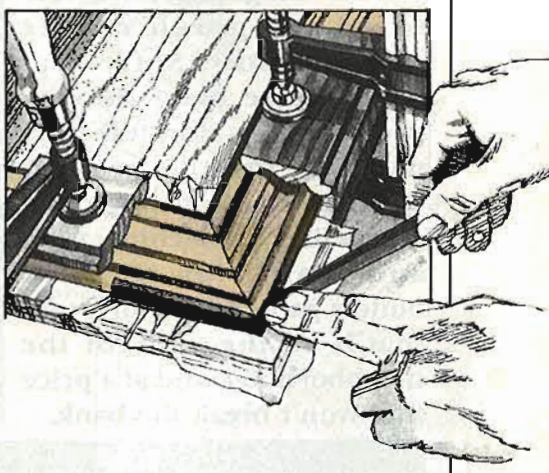
As shown *above right*, a short length of dowel rod provides a good surface for a handscrew clamp. If you don't own handscrew clamps, sand a flat spot onto the dowel for receiving bar-clamp pads. Note that in both instances you need to place some waxed paper beneath the mitered end of the molding. This prevents oozing glue from adhering your workpieces to the plywood.

3 Apply glue to both mitered ends of the joint. Then, position the other mitered workpiece, and repeat the clamping procedure. Adjust the clamps for light pressure—enough to hold the workpieces flat, but not so much that you can't slide them back and forth slightly.



4 With a narrow piece of duct-, strapping-, or some other fiber-reinforced tape, bring the mitered joint tightly together. (Masking tape does not have sufficient strength.) You should see a small amount of squeeze-out along the joint line.

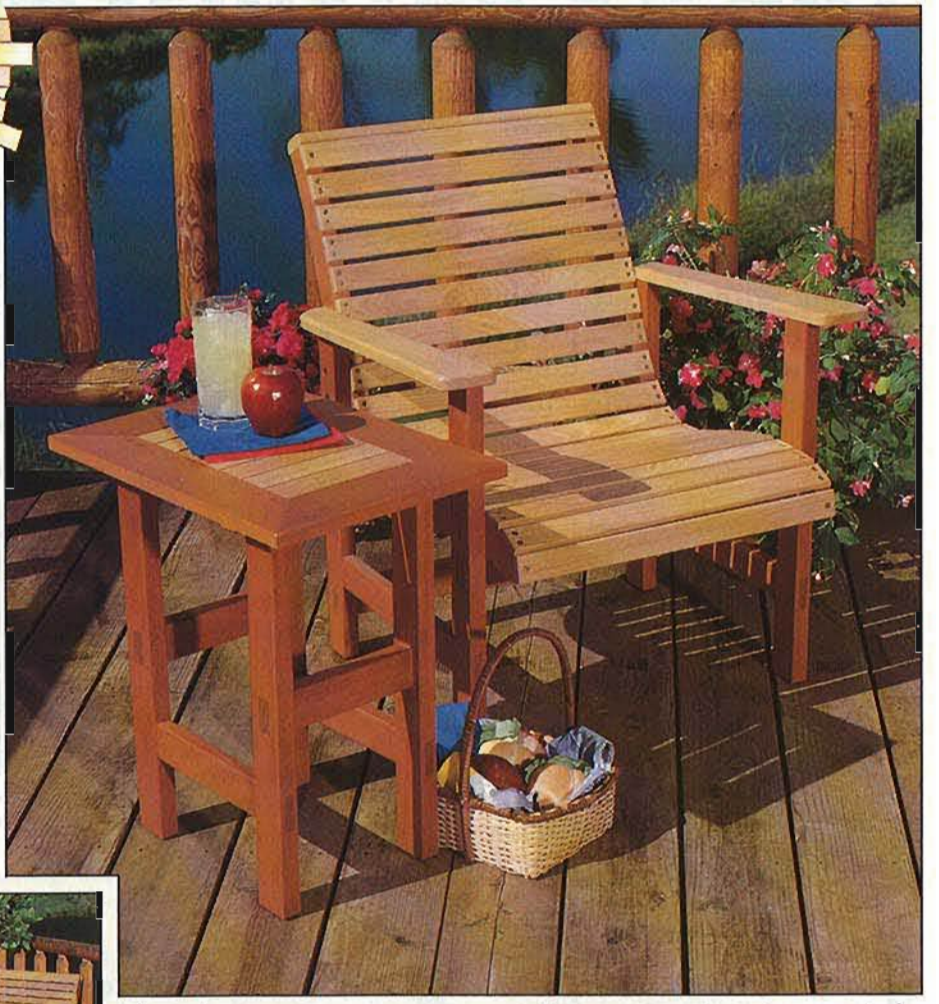
If possible, reinforce the joint with nails after the glue dries. Be sure to drill pilot holes to avoid splitting the wood.



Illustrations: Jim Stevenson

Print this article

FUN -IN-THE- SUN FURNITURE



In the June 1992 issue of *WOOD* magazine, we featured the porch rocker shown below. Since that time, we've been flooded with requests for full-sized patterns for the project. We've also been hearing that you'd like a matching table and chair. Now you can build a patio-full of furniture that'll be the envy of the neighborhood, and at a price that won't break the bank.

Perk up your patio or deck with this handsome table and chair

***Note:** For your convenience, we'll supply you with full-sized patterns for the slat supports (parts F, G). Or, if you just can't wait to get started, enlarge the gridded pattern shown on* page 51. *To receive the full-sized patterns, send $3 and a #10 business-sized (4⅛×9½") self-addressed envelope with 58¢ postage to Outdoor Chair Patterns, WOOD Magazine, 1912 Grand Ave, Des Moines, IA 50309-3379. (Foreign readers: Please include an international reply coupon.) If you missed the porch rocker in the June 1992 issue, send an additional $2 for a photocopy of the article.*

Let's begin with the legs, rails, and armrests

1 From 1⅛" genuine mahogany (not Philippine mahogany, which is not a true mahogany), cut the legs (A, B) to size plus 1" in length. Miter-cut the top end of each leg at 4° to cut the legs to the finished length stated in the Bill of Materials and shown on the End Frame Assembly drawing.

2 From ¾" genuine mahogany, cut the rails (C) to size.

3 Using the dimensions on the End Frame Assembly drawing, carefully mark the mortise and ¼" hole centerpoints on each leg (A, B). Following the four-step procedure on the Forming the Mortises drawing, drill and chisel the mortises through the legs.

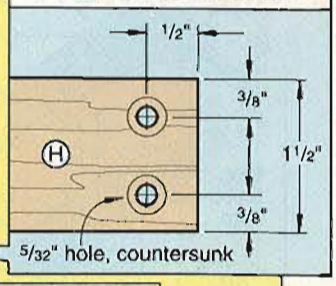
4 Drill and countersink a ¼" hole in each front leg (A) and two in each back leg (B).

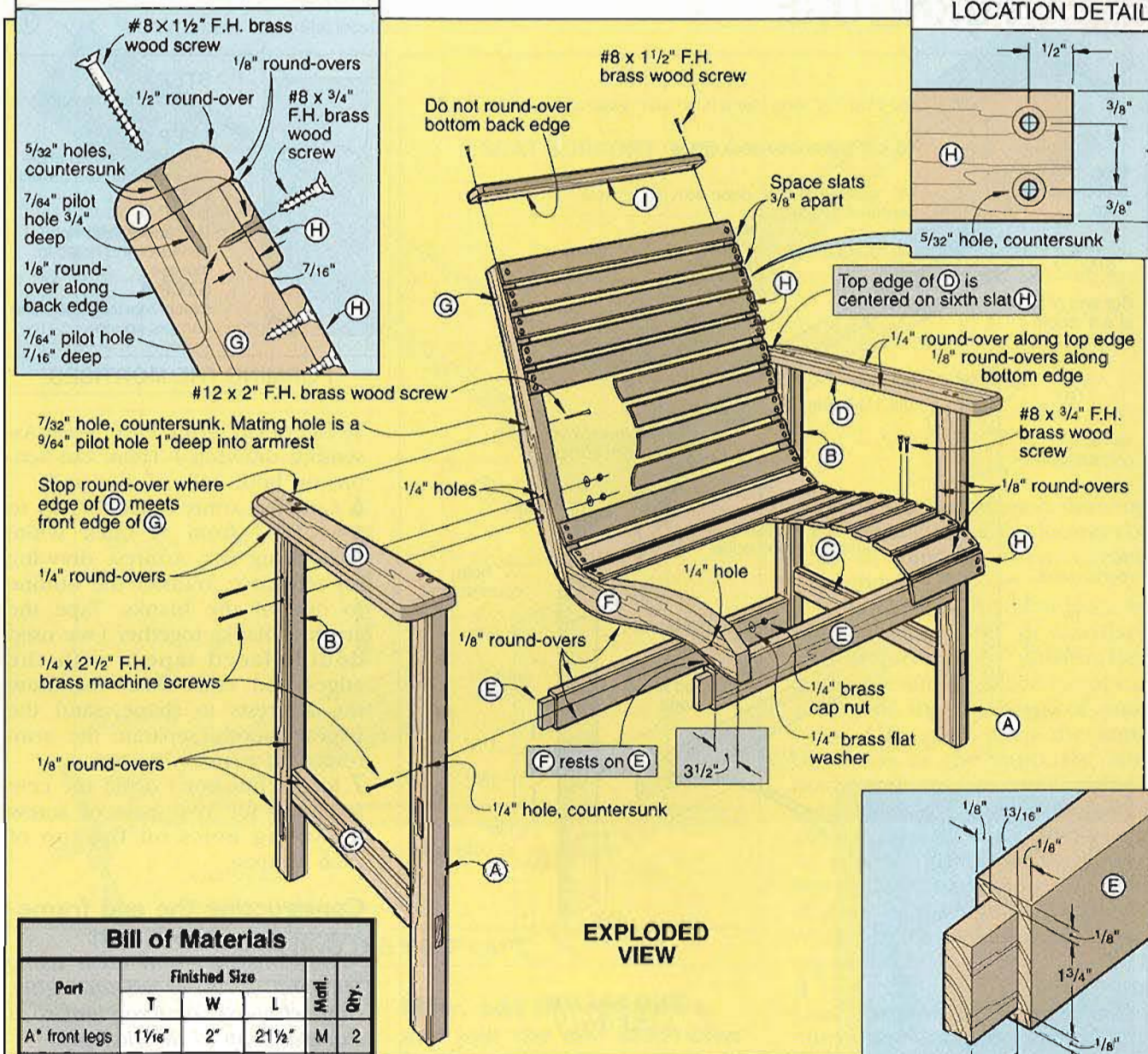
5 Mark the tenon locations on the ends of each rail (C). (See the

Text continues on page 50

SCREW HOLE DETAIL

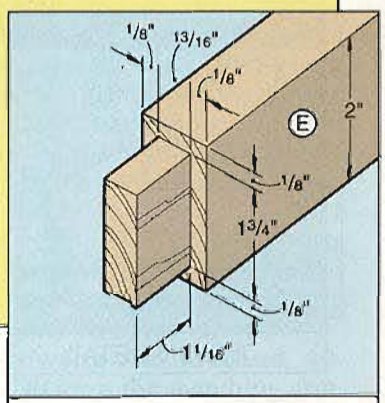
MOUNTING HOLE LOCATION DETAIL





EXPLODED VIEW

TENON DETAIL



Bill of Materials

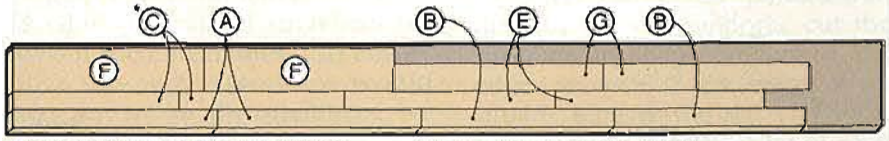
Part	Finished Size T	Finished Size W	Finished Size L	Matl.	Qty.
A* front legs	1 1/16"	2"	21 1/2"	M	2
B* back legs	1 1/16"	2"	20 1/4"	M	2
C rails	3/4"	2"	18 1/8"	M	2
D armrests	3/4"	3 1/4"	21 1/4"	WO	2
E stretchers	1 1/16"	2"	23 1/8"	M	2
F* btm. slat supports	1 1/16"	4 3/4"	21"	M	2
G* back slat supports	1 1/16"	3"	23"	M	2
H slats	5/16"	1 1/2"	21"	WO	20
I top slat	3/4"	2"	21"	WO	1

*Dimensions given are initial thickness, length, and width.

Material Key: M–genuine mahogany, WO–white oak

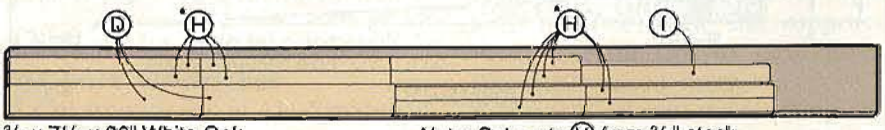
Supplies: 1/4 × 2 1/2" flathead brass machine screws with 1/4" brass flat washers and 1/4" brass cap nuts, #8 × 3/4" flathead brass wood screws, #8 × 1 1/2" flathead brass wood screws, #12 × 2" flathead brass wood screws, #8 × 2" galvanized deck screws, clear exterior finish.

CHAIR CUTTING DIAGRAM



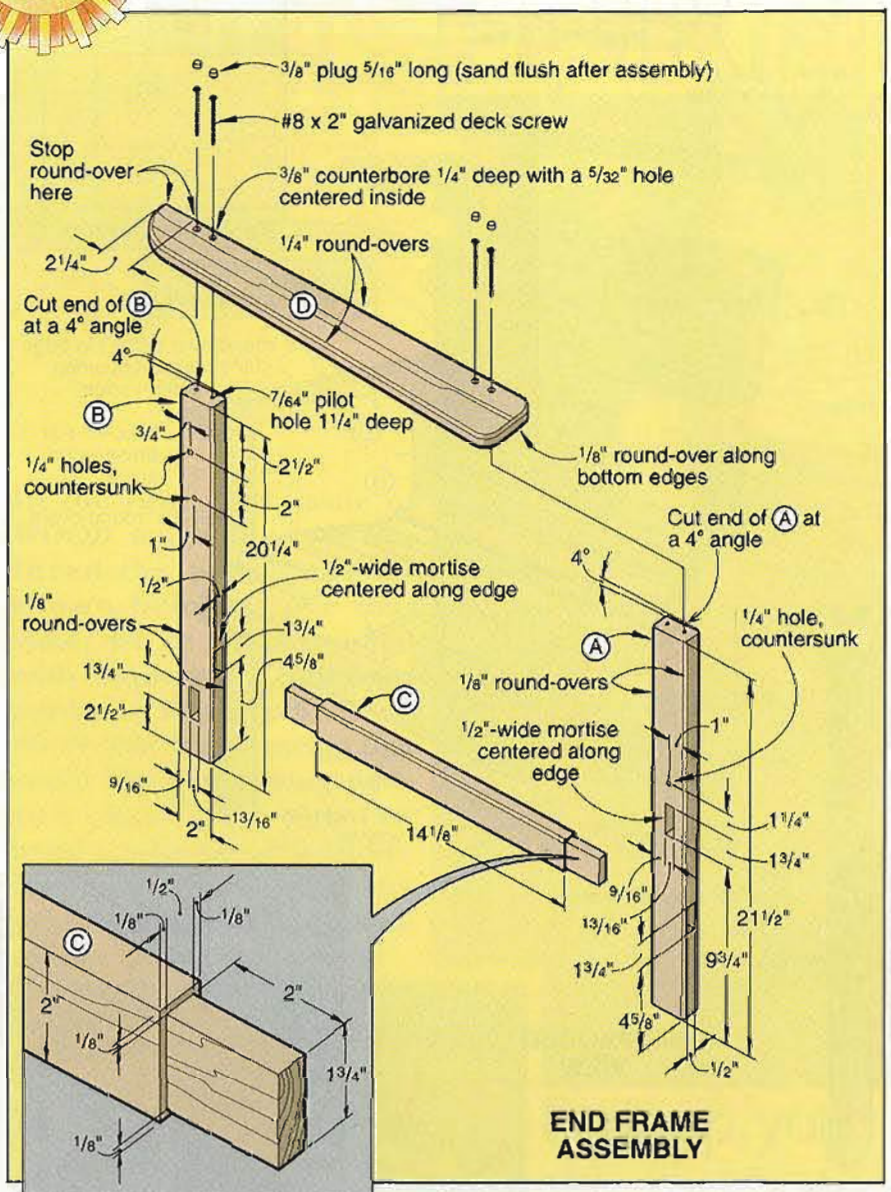
1 1/16 x 9 1/4 x 96" Genuine Mahogany

*Plane or resaw to size listed in Bill of Materials

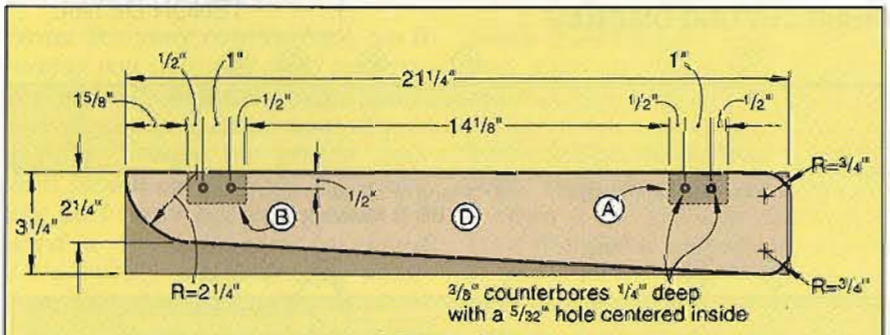


3/4 x 7 1/4 x 96" White Oak

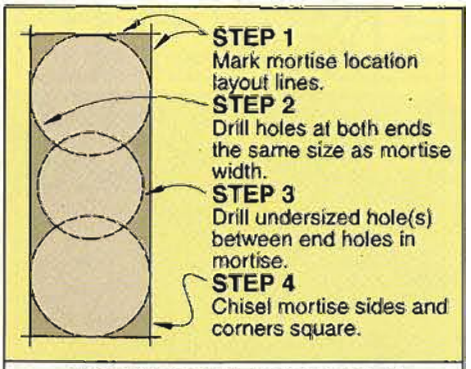
Note: Cut parts H from 3/4" stock, then resaw in half to form 5/16" slats



TENON DETAIL



ARMREST



FORMING THE MORTISES

Tenon detail in the End Frame Assembly drawing.) Then, cut tenons on both ends of each rail.

6 Cut two armrest blanks (D) to 3¼ × 21¼" from ¾"-thick white oak. Using the Armrest drawing for reference, transfer the outline to one of the blanks. Tape the armrest blanks together (we used double-faced tape), with the edges and ends flush. Bandsaw the armrests to shape, sand the edges smooth, separate the armrests, and remove the tape.

7 Mark (but don't drill) the centerpoints for two pair of screw mounting holes on the top of each armrest.

Constructing the end frame assemblies comes next

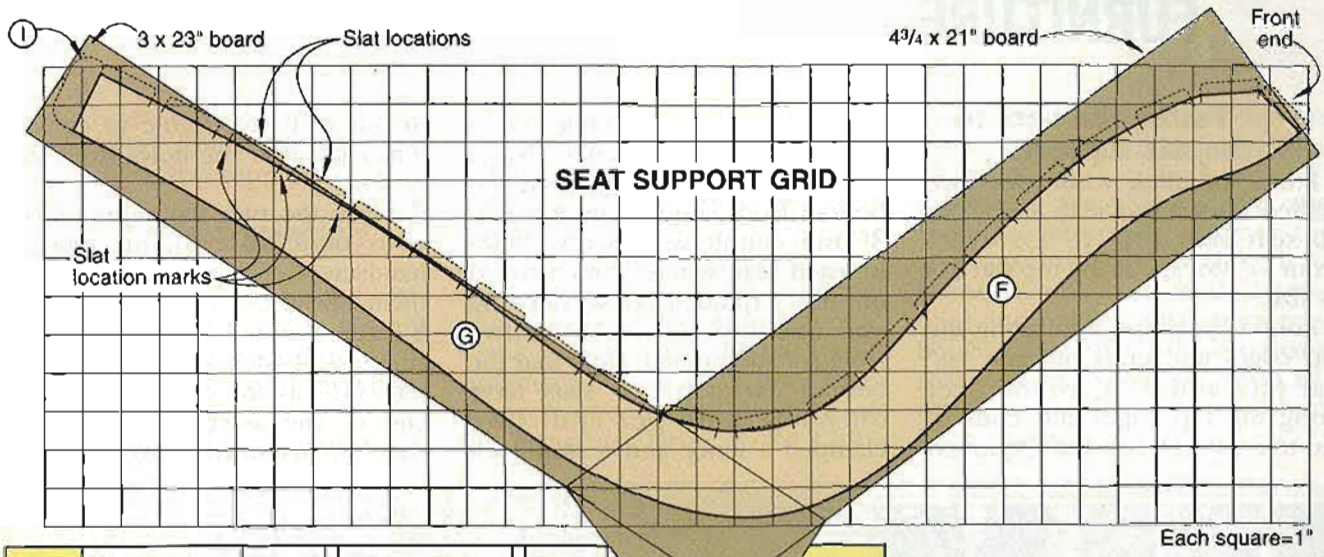
Note: Construct your chair using Titebond II water-resistant glue, slow-set epoxy, or resorcinol so it can stand up to the elements.

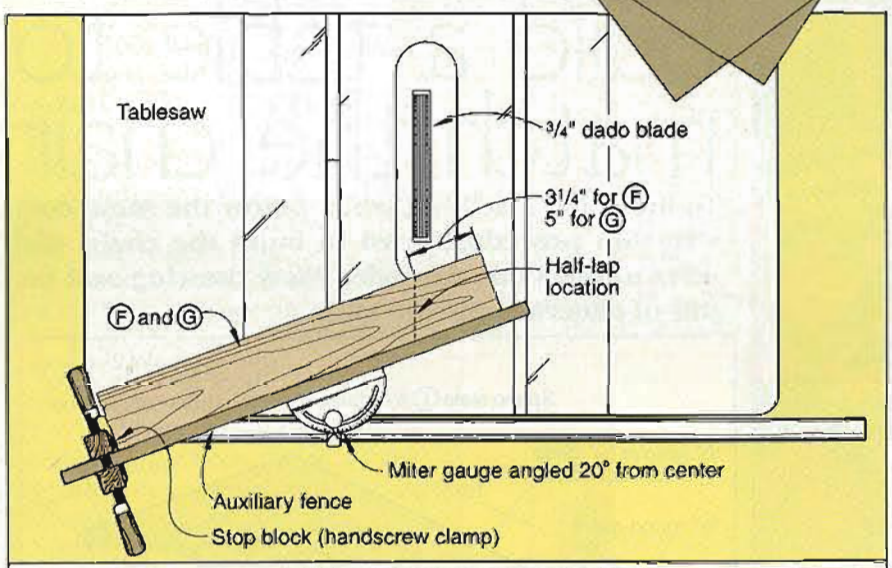
1 Rout ⅛" and ¼" round-overs on parts A, B, C, and D where shown on the End Frame Assembly and Exploded View drawings.

2 Glue and clamp a rail (C) between a front and back leg. Using a framing square, check that the legs are square to the rail.

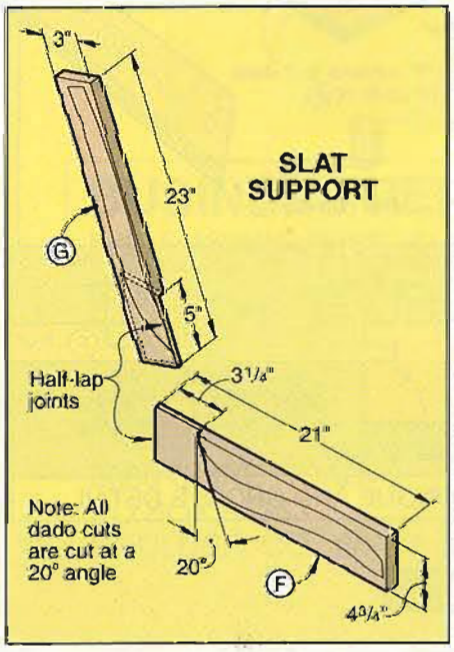
3 Clamp an armrest on the top of each end frame assembly (A, B, C). Verify that the marked mounting holes are located on the top of the legs. Re-mark if necessary.

4 Drill the mounting holes through the armrests and into the top ends of the legs. Screw the armrests to the leg tops, plug the holes, and sand the plugs flush.





CUTTING THE HALF LAPS



Now, add the stretchers, and join the end assemblies

1 Cut the stretchers (E) to size. Cut 1 1/16"-long tenons on the ends of each stretcher.

2 Rout ⅛" round-overs along the edges of each stretcher.

3 Glue the pair of stretchers between the end frames. (To ensure that the end assemblies would stay square to the stretchers, we clamped square corner braces in place and left them there until the glue dried.) Sand the chair frame.

Let's make the slat-support assemblies

1 Cut two pieces of 1 1/16" mahogany to 4¾ × 21" for the bottom-slat supports (F) and two pieces to 3 × 23" for back-slat supports (G).

2 Using the Slat Support drawing for reference, mark the location of a half-lap joint on one end of each slat support (F, G).

3 Mount a ¾"-wide dado blade to your tablesaw and an auxiliary wooden fence to your miter gauge. Elevate the blade to cut exactly half the thickness of your stock. (We used scrap the same thickness as the supports, and made test cuts to verify blade height.) Angle the miter gauge 20° from center, and clamp a stop to your auxiliary miter-gauge fence. Cut a half-lap on one end of each of the four slat supports where dimensioned on the drawing at *left*.

4 Dry-clamp the two supports (one F and one G per support) to check the fit. Glue and clamp each of the two slat supports.

5 Following the method described to form the matching armrests, tape the slat supports (F, G) together, transfer the pattern outlines to the slat supports, cut the supports to shape, and sand the edges smooth. Then, using a try square, transfer the slat (H) locations to the top front edge of each slat support. Pry the pieces apart, remove the double-faced tape, and finish-sand the slat supports, being careful not to sand away the slat location lines.

6 Rout ⅛" round-overs along the bottom and back edges of each slat support where shown on the Exploded View drawing.

Continued

Fasten the slats to the slat supports

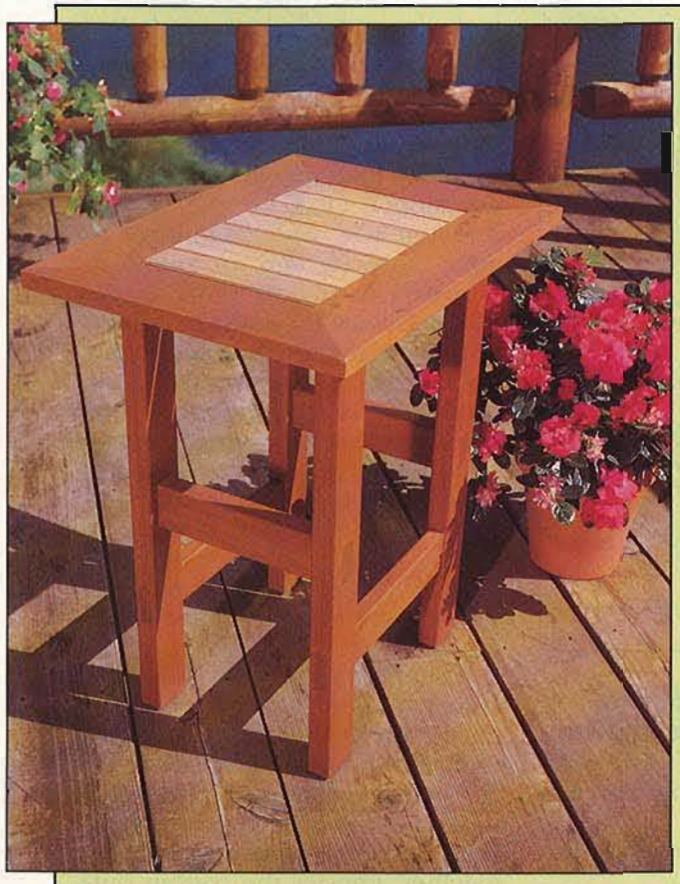
1 From 5/16"-thick white oak (we planed thicker stock to size), cut 20 seat slats (H) to 1½ × 21". From ¾" stock, cut the top slat (I) to size.

2 Rout a ⅛" round-over along the top edges and ends of each 5/16" slat (H) and a ½" round-over along the top edges and ends of the top slat (I). See the Exploded View and accompanying Screw Hole detail for reference. Next, rout a ⅛" round-over along the bottom front edge of the top slat.

3 Drill countersunk screw holes in each slat where dimensioned on the Exploded View drawing and accompanying Mounting Hole Location detail. Note that the bottom and top two slats have only one hole per end. (We clamped a fence and a stopblock to our drill-press table to consistently position the holes from slat to slat.)

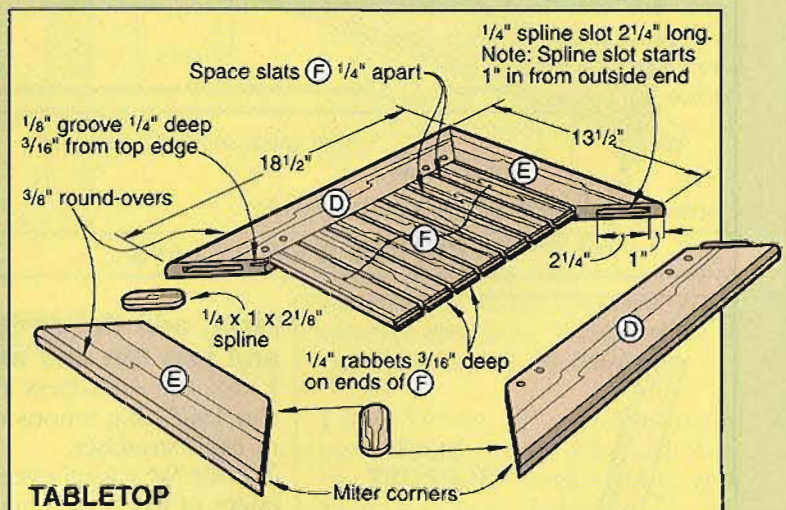
4 Place the two slat supports on your benchtop. Clamp a large handscrew clamp to each to hold them upright.

5 Screw the top slat (I) to the slat supports. Fasten one of the 5/16" slats (H) to the opposite bottom end of the assembly. Following the layout marks on the slat



Build a table to match the chair

To build the matching table, follow the same construction procedure used to build the chair, and refer to the Table Exploded View drawing and the Bill of Materials for the table.



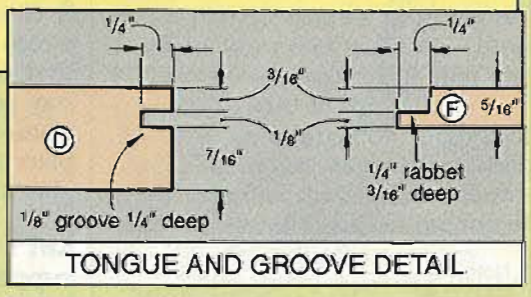
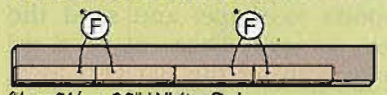
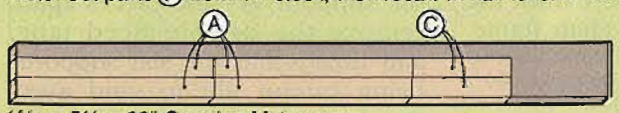


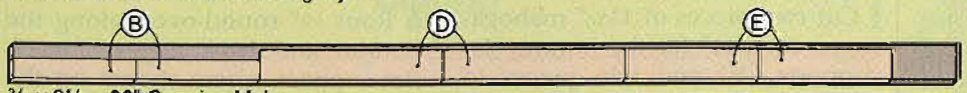
TABLE CUTTING DIAGRAM



3/4 x 3 1/2 x 36" White Oak
Note: Cut parts (F) from 3/4" stock, then resaw in half to form 5/16" slats



1 1/16 x 5 1/2 x 60" Genuine Mahogany



3/4 x 3 1/2 x 96" Genuine Mahogany

supports, fasten the remaining seat slats (H). Check that the slats are square to the supports.

Attach the seat assembly to the chair frame

1 With a helper, position the seat assembly on the chair frame where dimensioned in the tinted boxes on the Exploded View drawing. Once positioned, firmly clamp the seat to the frame.

2 Using the previously drilled ¼" holes in the front and rear legs as guides, drill ¼" holes through the supports. Using ¼" brass machine screws, flat washers, and cap nuts, connect the two assemblies.

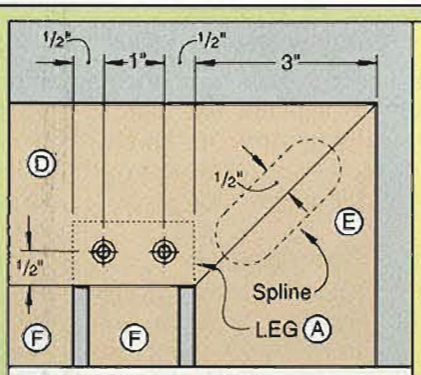
3 Working from the back of the chair, drill a 7/32" countersunk shank hole through the back seat supports (G) and a 9/64" pilot hole 1" deep into the inside edge of the armrests. Drive a #12×2" flathead brass wood screw through each support and into the armrests.

4 Remove the wood screws and machine screws to separate the seat assembly from the chair frame. Finish-sand both assemblies and apply a quality exterior finish. (We applied three coats of spar varnish.) After the finish has dried, fasten the two assemblies back together.

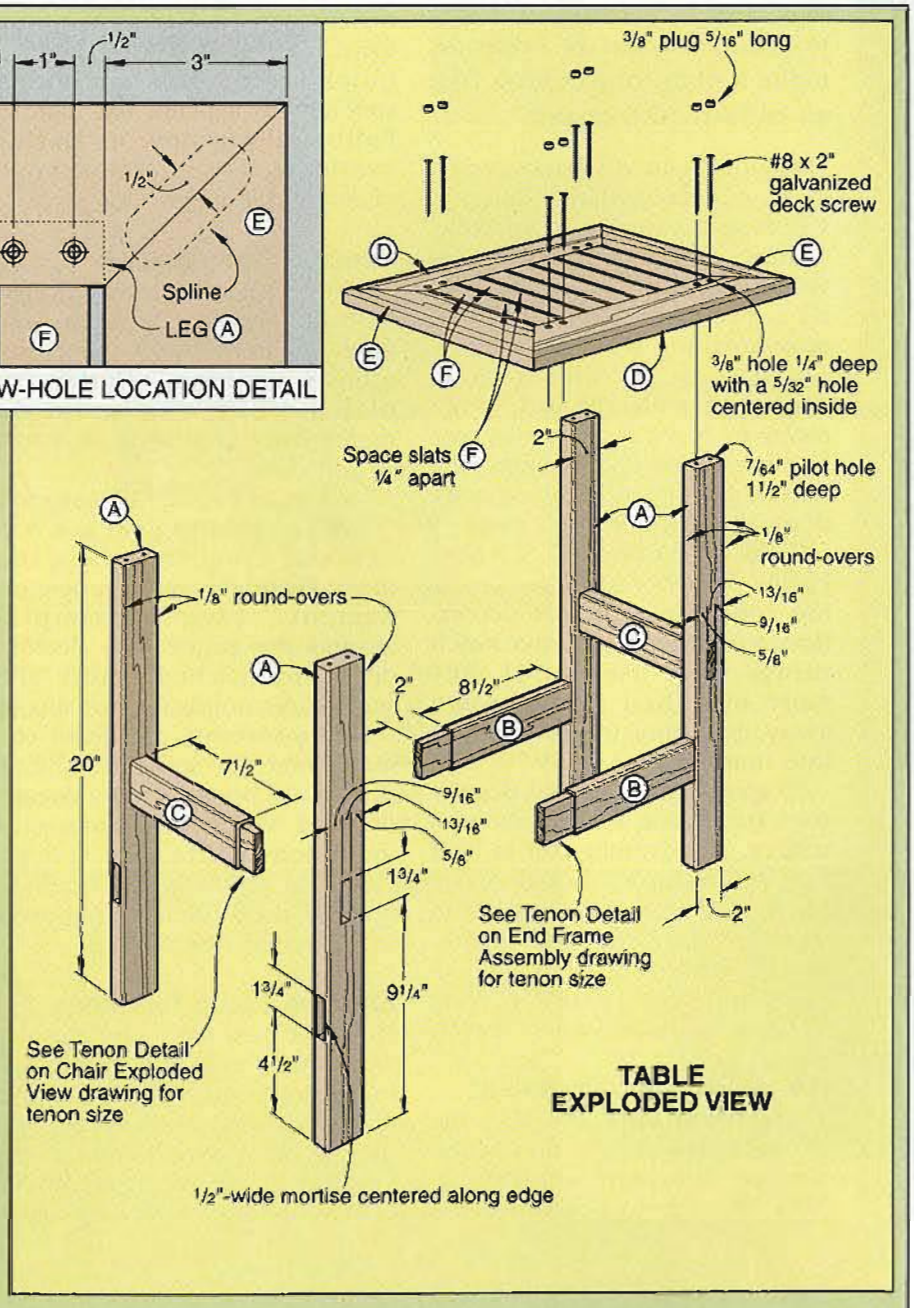
Using your router and a slot-cutting bit, rout ¼" spline slots 2¼" long in the mitered ends of the tabletop banding pieces (D, E). See the drawing at *left* for reference. Next, turn the banding pieces on edge, and cut a ⅛" groove along the inside edge of each (to accommodate the slats [F]) on your tablesaw. Then, use your tablesaw fitted with a dado blade and a miter-gauge fence to cut ¼" rabbets across the ends of the slats (F). Check the fit of the slat ends into the grooves cut in the banding pieces.

Assemble the table base, and then the tabletop. Finally, screw the two assemblies together and add the finish.

Produced by Marlen Kemmet. Project Designs: James R. Downing. Photographs: John Hetherington. Illustrations: Kim Downing



SCREW-HOLE LOCATION DETAIL



Bill of Materials

Part	Finished Size T	Finished Size W	Finished Size L	Mat'l.	Qty.
A legs	1 1/16"	2"	20"	M	4
B stretchers	¾"	2"	12½"	M	2
C rails	1 1/16"	2"	9⅝"	M	2
D banding	¾"	3"	18½"	M	2
E banding	¾"	3"	13½"	M	2
F slats	5/16"	1½"	8"	WO	7

Material Key: M–genuine mahogany, WO–white oak

Supplies: #8×2" galvanized deck screws, clear exterior finish.

BARKROSING

A nifty Nordic decorative technique you'll want to try

You won't find an easier way than barkrosing to dress up anything wooden. With a knife, some sandpaper, and a chunk of bark, you have what it takes to make a plain object look like an old-world treasure.

"Anybody can do barkrosing," says woodcarver Harley Refsal as we sit at his dining room table, etching patterns into pieces of wood. He's right; it's easy. And it's a great embellishment for almost anything wooden.

Barkrosing, coloring a knife-cut design with tree bark, originated in Norway centuries ago. Historians don't know precisely when, however. That's partly due to its humble beginnings.

"This wasn't fine art," explains Harley, *WOOD®* magazine's carving consultant. "It was decoration for everyday items. Such things were used until they wore out, then were thrown away. So, they never made it into museums for study."

Despite being a carved decoration, barkrosing leaves a smooth surface, an advantage for at least two common early-day uses. Kitchenware, such as bowls and spoons, wiped clean easily. And on skis, barkrosing didn't collect snow and ice as raised carving or open engraving would have.

An adaptable adornment

Today, barkrosing still fills the bill for quick, easy-to-do decoration on utilitarian wooden objects. "It's a great way to make a nice, quick, handmade gift," Harley points out. "Just buy a plain wooden spoon and dress it up with a little barkrosing."

To try out that idea, we head downtown in Harley's hometown, Decorah, Iowa. There, a quick search nets a wooden spoon with a plain, flat handle. Follow along now as Harley transforms it from ordinary into distinctive in a few easy steps.

Pencil a few doodles

The first step is to draw a design onto the handle. "A simple geometric pattern looks good and follows tradition," Harley explains. "But, you could do monograms or designs as fancy as you dare."

"When in doubt," he suggests, "draw two parallel lines as a border, and crosshatch between them. Diamonds make a nice ornament." (See the samples around the pages.) He decides on a crosshatched border and stacked diamonds for our spoon.

Harley sketches the major elements onto the spoon handle, as shown in *photo A*. He doesn't draw in all of the details—just indications where they will go. "You can follow a fine line better with the knife blade, so use a sharp pencil," he advises.

Engrave those fine lines

Next, he inscribes the design. "Any sharp knife will suffice, but the closer to the tip you can grip it, the better," Harley says. He uses a 6mm Swiss knife blank (catalog no. 05S12, from Woodcraft Supply Co., 800/225-1153), but you may find an X-Acto knife more comfortable to use because of its thicker grip.

The technique is simple: just grip the knife as you would a pencil, and score along the guidelines, shown in *photo B*. A simple incision with the knife perpendicular to the surface works best.

Harley presses the knife tip into the wood just deeply enough to open a visible slit. "For bolder lines, cut a little deeper and wider," he says, "but keep each line uniform." Pay attention to the grain lest it steer your knife off in a direction you weren't planning to go. Erasing a mistake, when it's possible, calls for a lot of sanding.

Now, Harley grabs a chunk of walnut bark scavenged from his yard. He rubs the corky outside of the bark along a piece of 180-grit sandpaper, making fine, brown dust (*photo C*).

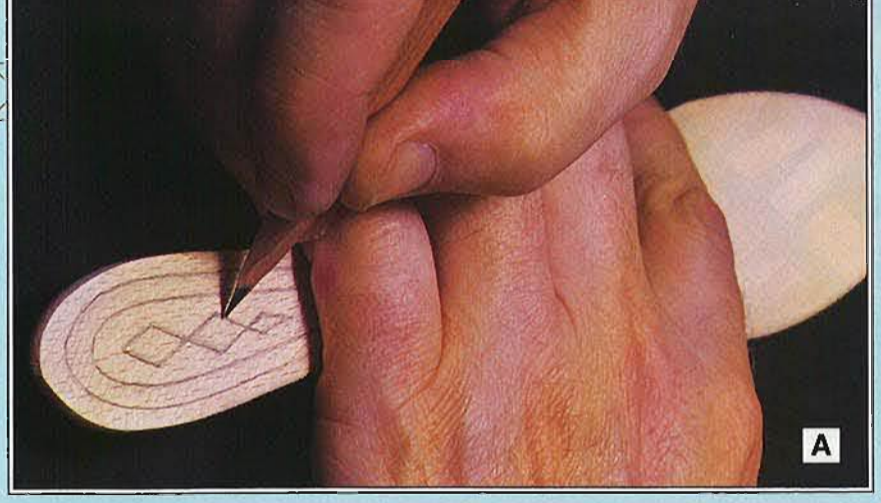
Go ahead, rub it in

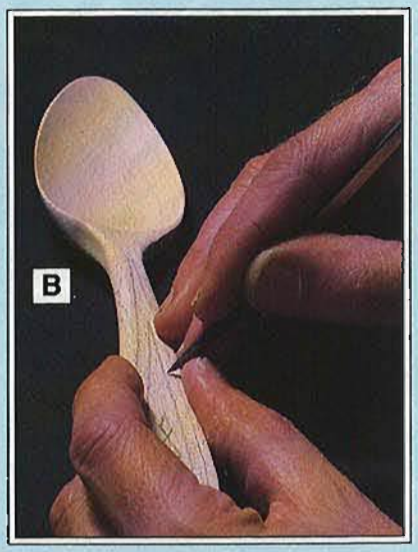
Then, he picks up a pinch of the bark powder and rubs it into the incised design with his fingertips (*photo D*). He works bark dust into all parts of the design. Next, he lightly sands the carved and filled area with 400-grit sandpaper to remove the edges raised by the blade.

Finally, he applies a clear oil finish (*photo E*). For the spoon, which could be used for serving or preparing food, he uses Behlen's Salad Bowl Oil.

Written by Larry Johnston
Photographs: Chip Peterson
Illustrations: Kim Downing

Print this article

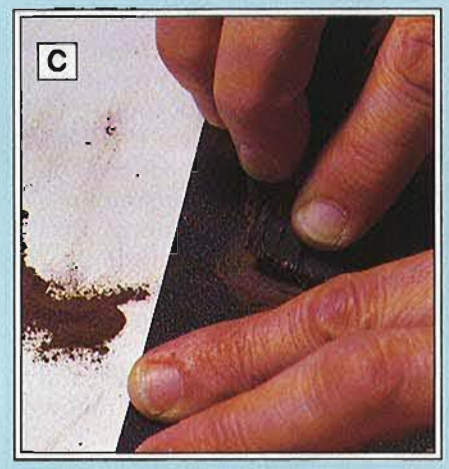




▲ Draw light guidelines. That way, they'll come off without excessive sanding. Too much sanding to remove the guidelines after you've cut your design into the wood will ruin your work. Try out your design first on paper.

▶ Hold the knife as close to the tip as possible for maximum control. Be sure to use a sharp knife for clean, crisp lines.

▼ A piece of 180-grit sandpaper produces fine bark dust in a hurry. We show walnut here, but other tree barks will work.

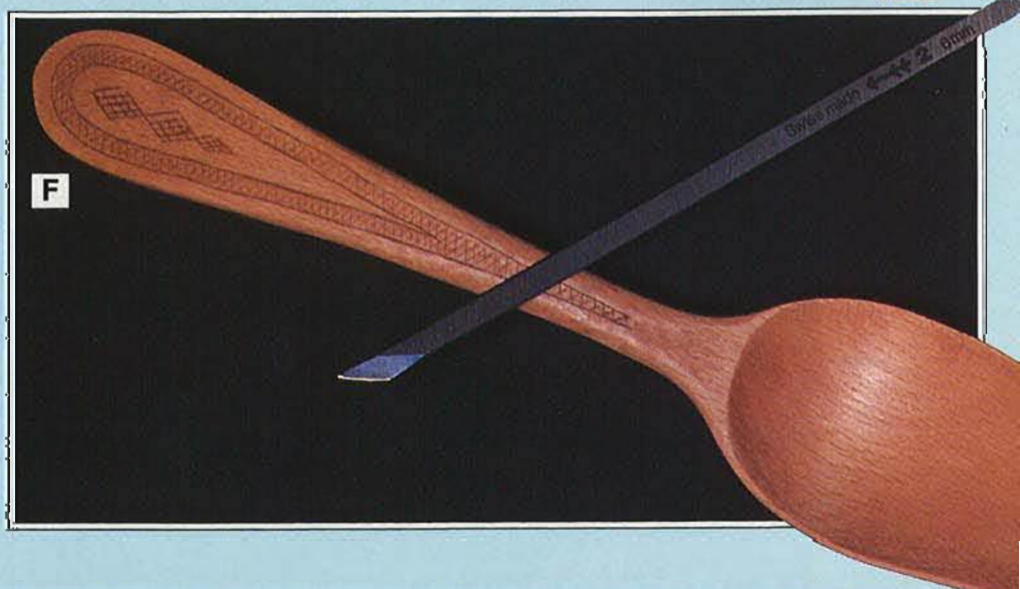


▲ Rub the bark powder into the lines with your fingertips. This really isn't as messy as it looks, but do it over paper, anyway.

◀ Salad-bowl oil brings out the color of the barkrosing, and soaks into the powdered bark to bind it to the base wood. You also could apply lacquer or polyurethane for a protective coating on decorative items.

▼ Harley Refsal used the 6mm Swiss knife blank shown to carve the design into the spoon handle. Any knife you can grip near the tip will work.

▼ You can combine elements from traditional designs such as the ones around these pages to make borders and ornaments. Any geometric designs, old or new, adapt well to the technique.



PATTERNS, PATTERNS, EVERYWHERE

SCROLLSAW PATTERNS FROM PRINTED PICTURES

Print this article

We have yet to meet a scrollsawer who couldn't use a few more patterns. So here are some methods you can use to turn almost any printed photograph or illustration into a scrollsaw project.

Note: With these techniques, you'll almost assuredly be using artwork or photographs that are copyrighted. To avoid legal woes, don't use such patterns to make items for sale.

A king's ransom in scrollsaw patterns awaits you at the newsstand. In magazines, children's storybooks, picture postcards, greeting cards, calendars, and coloring books, you'll find a marvelous array of photographs and illustrations. And they're all potential scrollsaw patterns!

Whether you like airplanes or zebras, you're sure to find something appealing. When you do, you can take any of several approaches to using it as a pattern. Here are three of our favorite methods for making patterns from pictures.

- **Tracing.** Line drawings, such as coloring-book illustrations, make great silhouette patterns. Enlarge or reduce the artwork on a photocopier if you wish. Then, simply trace the outline onto your stock with carbon paper or transfer paper. (You can trace photographs, too, as we did with the gymnast silhouette shown.) These cutouts lend themselves to painting or woodburning, too.
- **Direct mount.** Attach illustrations or photographs directly to your stock with spray adhesive. If the art is strictly a cutting pattern, follow the spray-can instructions for temporary mounting. Peel the pattern off after cutting.

If, on the other hand, you want the printed image to be part of your design, as we did with the car key hanger and jukebox CD rack, follow

A foam brush works great for applying transfer medium to the face of the printed image. The medium brushes on opaque, but dries clear. Allow the medium to dry thoroughly before proceeding.

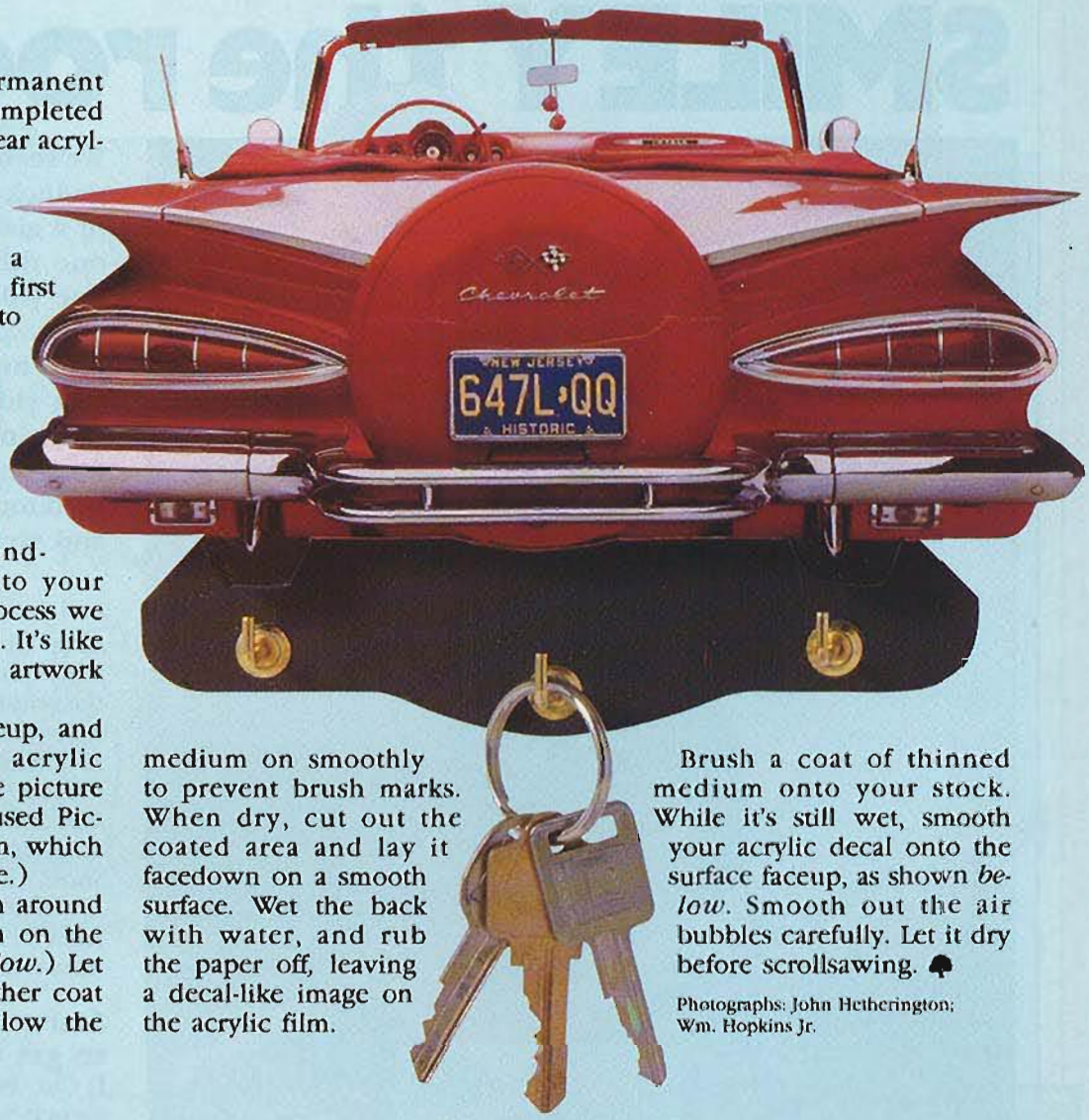
the instructions for permanent mounting. Spray the completed cutout with lacquer or clear acrylic for protection.

When you're using an illustration from a magazine this way, mount a small piece of the page first and spray it with acrylic to make sure that the type from the back won't show through and spoil your picture. If it does, use the next method.

• **Transfer.** Lift an image right off a printed page—color or black-and-white—and stick it onto your stock with the simple process we used for our Kachina doll. It's like converting the published artwork into a decal.

First, lay the page faceup, and brush an even coat of acrylic transfer medium over the picture you want to save. (We used Picture This Transfer Medium, which we bought at a craft store.)

Allow an ample margin around the picture as you brush on the medium. (See photos *below.*) Let dry, and then apply another coat crosswise to the first. Flow the medium on smoothly to prevent brush marks. When dry, cut out the coated area and lay it facedown on a smooth surface. Wet the back with water, and rub the paper off, leaving a decal-like image on the acrylic film.



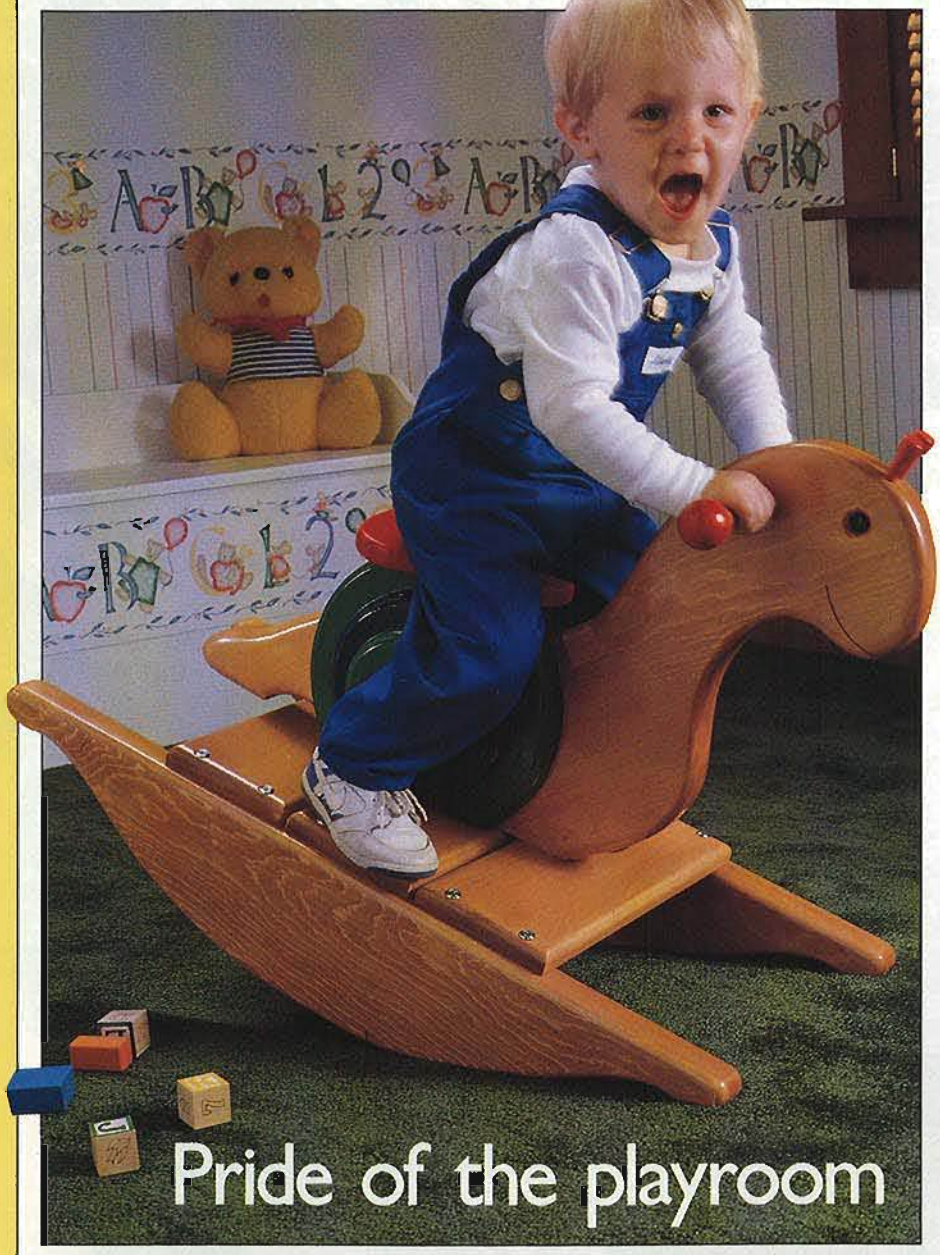
Brush a coat of thinned medium onto your stock. While it's still wet, smooth your acrylic decal onto the surface faceup, as shown *below.* Smooth out the air bubbles carefully. Let it dry before scrollsawing. ♠

Photographs: John Hetherington; Wm. Hopkins Jr.

With the picture facedown, wet the uncoated back with water and rub gently with a sponge or clean foam brush to remove the paper. The image remains on the acrylic film.

Brush water-thinned medium onto the wood, and carefully lay the picture faceup on the wet surface. Work out bubbles and wrinkles, taking care not to stretch the pattern out of shape. Light-colored wood preserves more detail.

SMILEY the rocking



We're not sure if our happy-go-lucky snail rocker is a boy or a girl, but we are certain of one thing. Your special little one will fall in love with this perky playroom pal the first time he or she takes it for a test ride. In addition to its winning looks, this project features sturdy construction held together by glue, dowels, and screws.

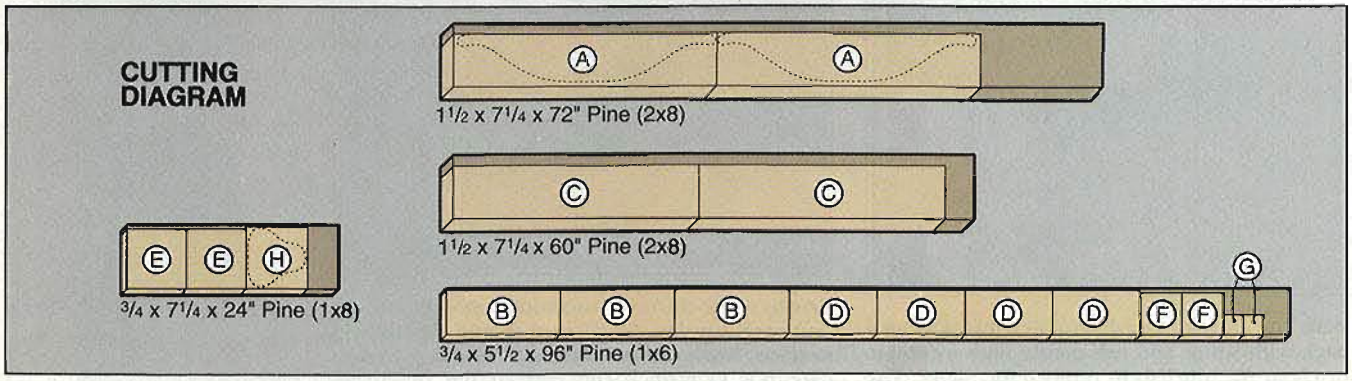
Note: *To lay out the rocker and body patterns, you can enlarge the gridded patterns on* page 60 *or order full-sized patterns from us. To order, send $3 and a #10 (4⅛ × 9½"), self-addressed envelope with 58¢ postage to WOOD Magazine's Smiley the Rocking Snail, 1912 Grand Avenue, Des Moines, IA 50309-3379. (Foreign readers: Please include an international reply coupon.)*

Start with the rockers to get things moving

1 Cut two pieces of clear pine, spruce, or fir to 6" wide by 31" long for the rocker blanks (A). Plane or joint the *top* edge of each piece.

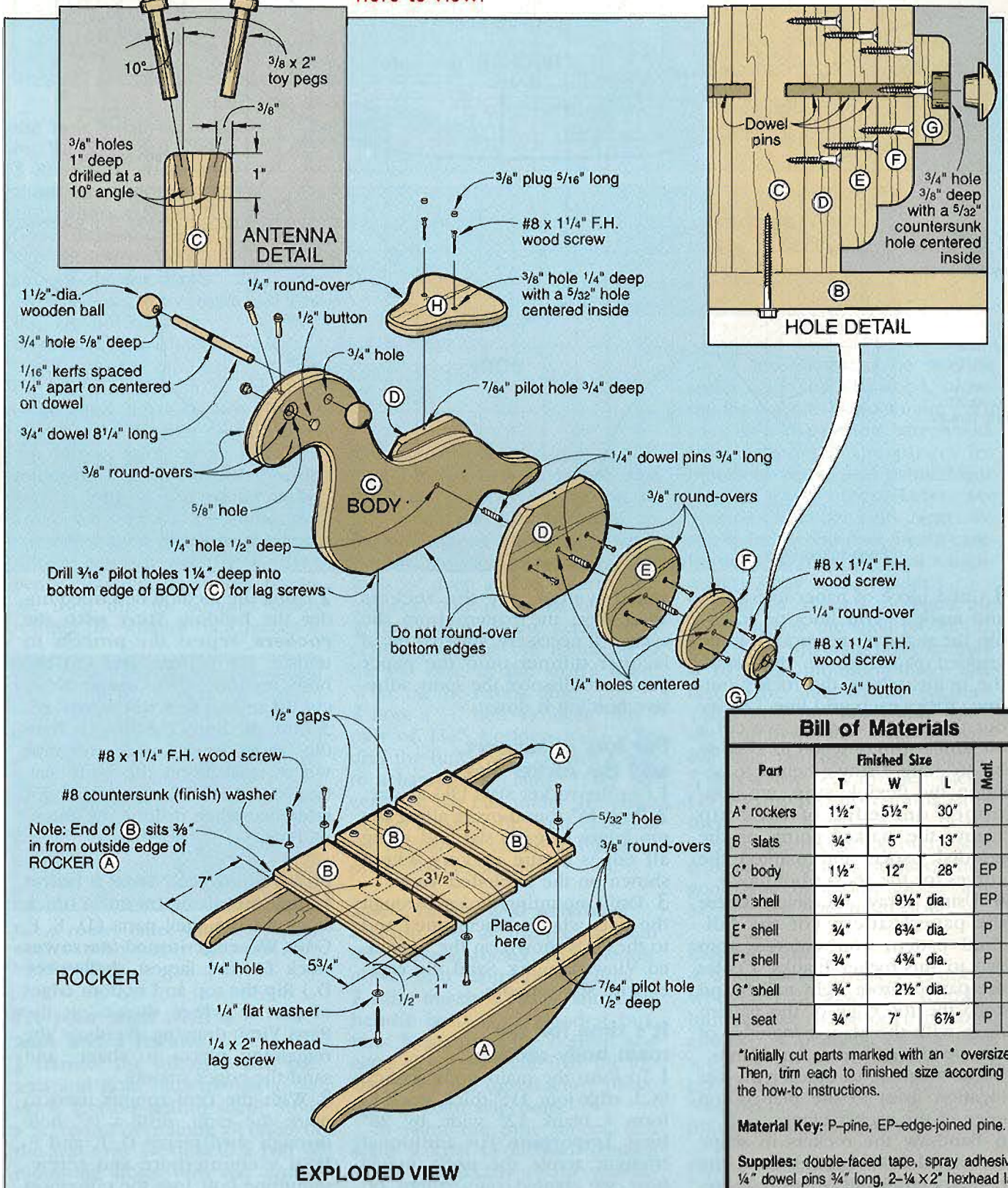
2 Using double-faced (carpet) tape, adhere the two rocker blanks together face-to-face, with the edges and ends flush.

Text continues on page 60



snail

Important safety update: See the Oct. 1993 issue (no. 64), pg. 7 for an important safety update. Click here to view.



EXPLODED VIEW

Bill of Materials

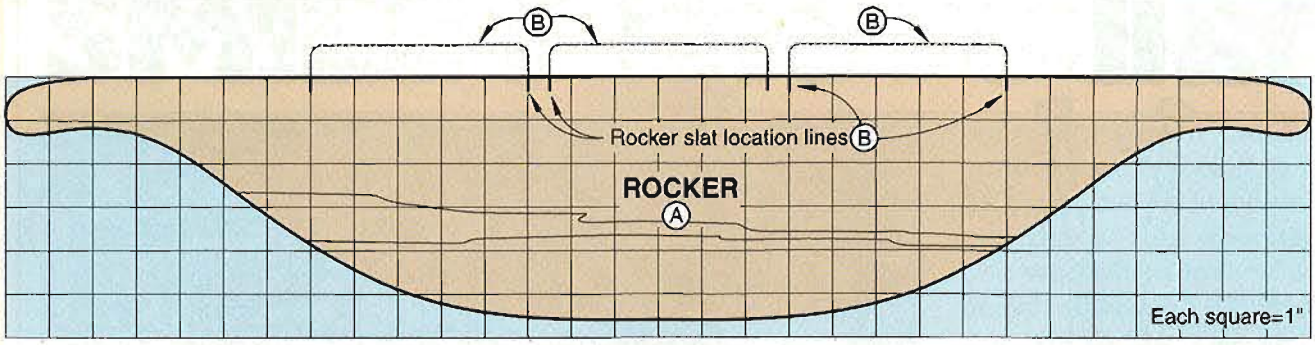
Part	Finished Size			Matl.	Qty.
	T	W	L		
A* rockers	1½"	5½"	30"	P	2
B slats	¾"	5"	13"	P	3
C* body	1½"	12"	28"	EP	1
D* shell	¾"	9½" dia.		EP	2
E* shell	¾"	6¾" dia.		P	2
F* shell	¾"	4¾" dia.		P	2
G* shell	¾"	2½" dia.		P	2
H seat	¾"	7"	6⅞"	P	1

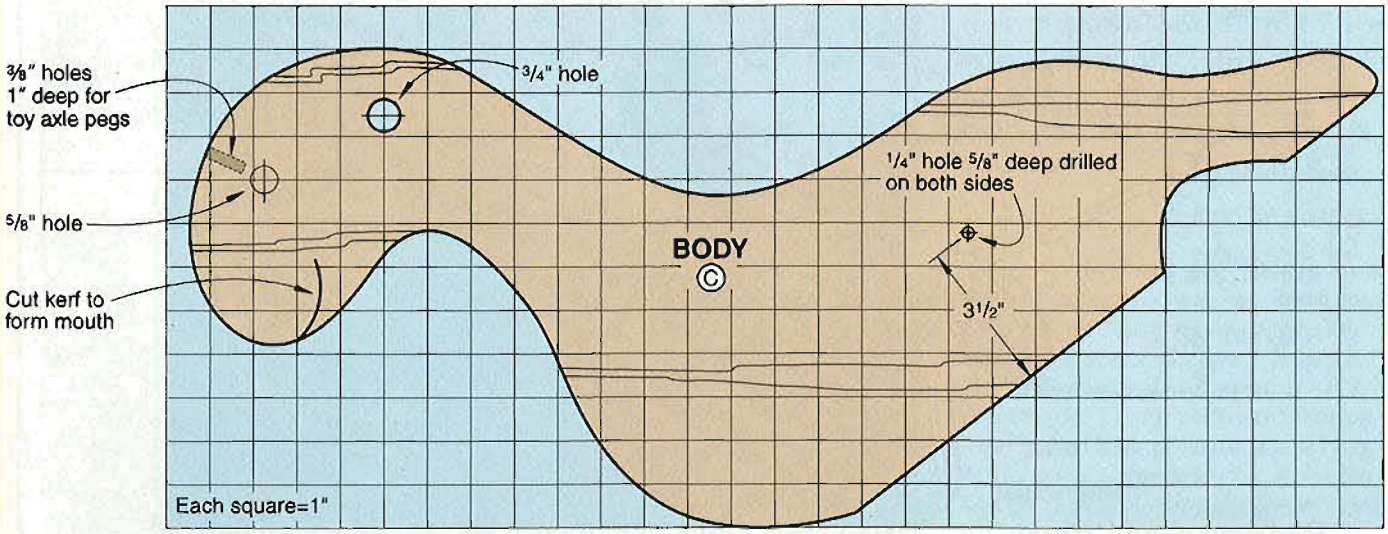
*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.

Material Key: P–pine, EP–edge-joined pine.

Supplies: double-faced tape, spray adhesive, ¼" dowel pins ¾" long, 2–¼ x 2" hexhead lag screws with ¼" flat washers, #8 x 1¼" flathead wood screws, #8 finish (countersunk) washers, ¾" dowel stock, blue, red, and green enamel paints, stain, clear finish.

SMILEY the rocking snail





3 Cut a piece of paper to 6×30", and mark 1" grid lines on it. Lay out the shape of the rocker on the gridded paper. To do this, mark the points where the rocker outline crosses each grid line. (To lay out the curved bottom, we cut a 3/16"-thick strip of wood to 1" wide by 36" long. Using a helper to position the flexible strip, we positioned one edge of the strip against the marked points on the gridded paper, and marked the curves for the rocker bottoms.)

4 Using spray adhesive, adhere the paper pattern (or the full-sized pattern you ordered from us) to the rocker blanks. Center the pattern from right to left and keep the *top* edge of the pattern flush with the planed *top* edge of the taped-together rocker blanks.

5 Use a square to transfer the slat location lines to the planed top edge of the rocker blanks.

6 Bandsaw the rockers to shape (we used a 1/4" blade). Sand the bandsawed edges smooth to remove the saw marks. Using a wood wedge, pry the rockers apart. Peel the pattern from the rocker. If necessary, splash a bit of lacquer thinner onto the paper pattern to dissolve the spray adhesive holding it down.

For lots of support, add the rocker slats

1 Cut the rocker slats (B) to size.

2 Rout 3/8" round-overs along the top edges of each slat and along all edges of the rockers where shown on the Exploded View.

3 Drill mounting holes through the slats where dimensioned and to the sizes shown on the Exploded View drawing. Sand the rockers and slats smooth.

It's time for the main body section

1 To form the main body section (C), edge-join 1 1/2"-thick stock to form a blank 12" wide by 28" long. **Important:** For additional strength across the neck, notice how we slanted our pattern on the grid and wood blank.

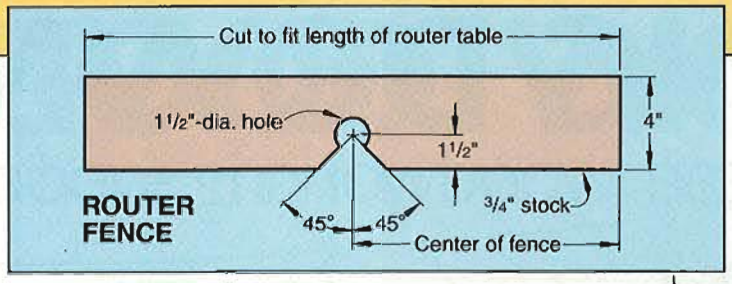
2 Using the method described under the heading ***Start with the rockers***, repeat the process to transfer the pattern, and cut the body section (C) to shape. Next, cut the mouth kerf where marked.

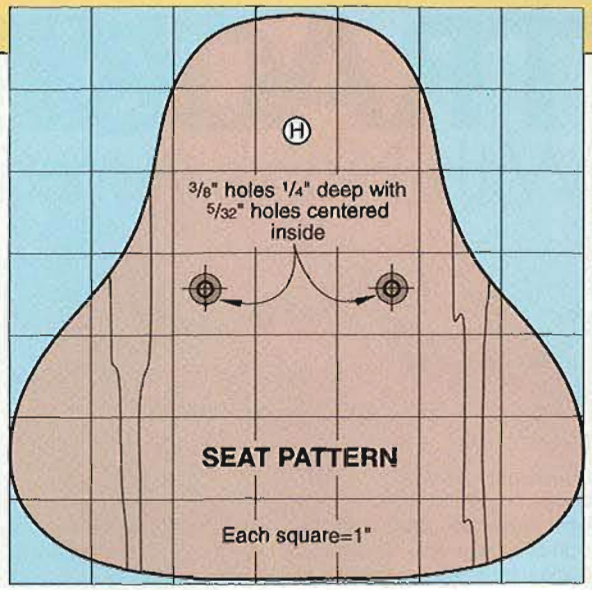
3 Bore the holes for the eye, handle, shell dowels, and antennae where marked on the body section. See the Antenna detail for reference when drilling the antenna holes.

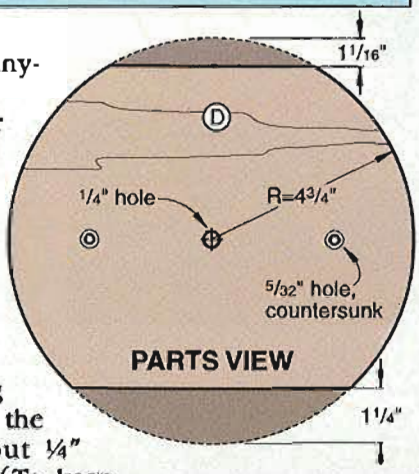
Now, build your snail a home

1 Mark the diameters on 3/4"-thick stock for the shell parts (D, E, F, G). (We edge-joined narrower stock for the largest shell piece D.) Rip the top and bottom edges of part D where shown on the Parts View drawing. Bandsaw the remaining pieces to shape, and sand the edges smooth.

2 With the centerpoints used to mark the radii, drill a 1/4" hole through shell pieces D, E, and F. Drill a counterbore and screw-mounting hole into the outermost shell part G to the sizes stated on

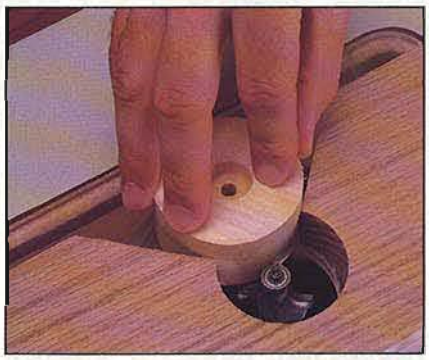






the Hole detail accompanying the Exploded View.

3 Rout a ⅜" round-over along the outside face of shell pieces D, E, F, body section C, and eye openings where shown on the Exploded View drawing. Do not rout the bottom edge of the body section or along the top and bottom of the large shell parts D. Rout ¼" round-overs on part G. (To keep our fingers safely away from the router bit, we cut a board 4" wide and as long as our router table. Then, we bored a 1½" hole and cut a V-shaped notch to the hole where shown on the Router Fence drawing. As shown *below*, we used this for support when routing the smaller shell pieces.)



Use a router fence with a V-shaped notch to safely support the round discs when routing.

Fit your snail with a seat and a handle

1 Transfer the full-sized seat pattern and hole centerpoints to ¾" stock. Cut the seat to shape. Rout a ¼" round-over along all edges of the seat (H). Next, drill a pair of mounting holes into the top of the seat where shown and dimensioned on the Seat pattern.

2 Cut a piece of ¾" dowel to 8¼" long for the handle. Locate and mark the center 1½" section of the dowel that will fit inside in the snail's head. Then, use a bandsaw or handsaw to cut three 1/16" kerfs ⅛" deep and ¼" apart (glue grooves) within the marked area.

3 Apply glue to the kerfs. Next, center and glue the handle into the ¾" hole in the snail's head. Wipe off the excess glue.

4 Bore a ¾" hole ⅝" deep into a pair of 1½" wooden balls. (To drill the holes, we clamped a ball in a handscrew clamp. Then, we centered the ball under the point of the Forstner bit, and clamped the handscrew clamp to the drill-press table to steady it.)

Sand, finish, and assemble

1 Finish-sand all the pieces. Stain the rockers, rocker slats, handle dowel, and main body section.

2 Paint the shell pieces, antennae, handle balls, and wooden buttons. Next, paint the *bottom and edges* of the seat (you'll do the top later). See the introductory photo for our color selections.

To paint the pine pieces, first apply a coat of lacquer sanding sealer—especially to the porous end grain. Let dry, and lightly sand with 220-grit sandpaper. Apply a second coat. The sanding sealer helps seal the wood, allowing the paint to build a more even coat than if painting bare wood. (We supported the pieces on blocks of wood, and painted one side of each piece. Later, we painted the other side. Next, we applied a second coat, being careful to avoid runs. We used a high-quality spray enamel paint.)

3 Using ¼" dowels to center the pieces, screw the shell pieces (D, E, F, G) to the main body section.

4 Drill the mounting holes and fasten the slats to the rockers. Then, drill the holes and fasten the snail to the slats. Glue the handle balls onto the dowel handle.

5 Screw the seat to shell pieces (D). Plug the holes and sand them flush. Mask the rest of the snail, and paint the top of the seat.

6 Sand the mating surfaces for a good glue joint. Glue the ½" and ¾" wooden buttons in place.

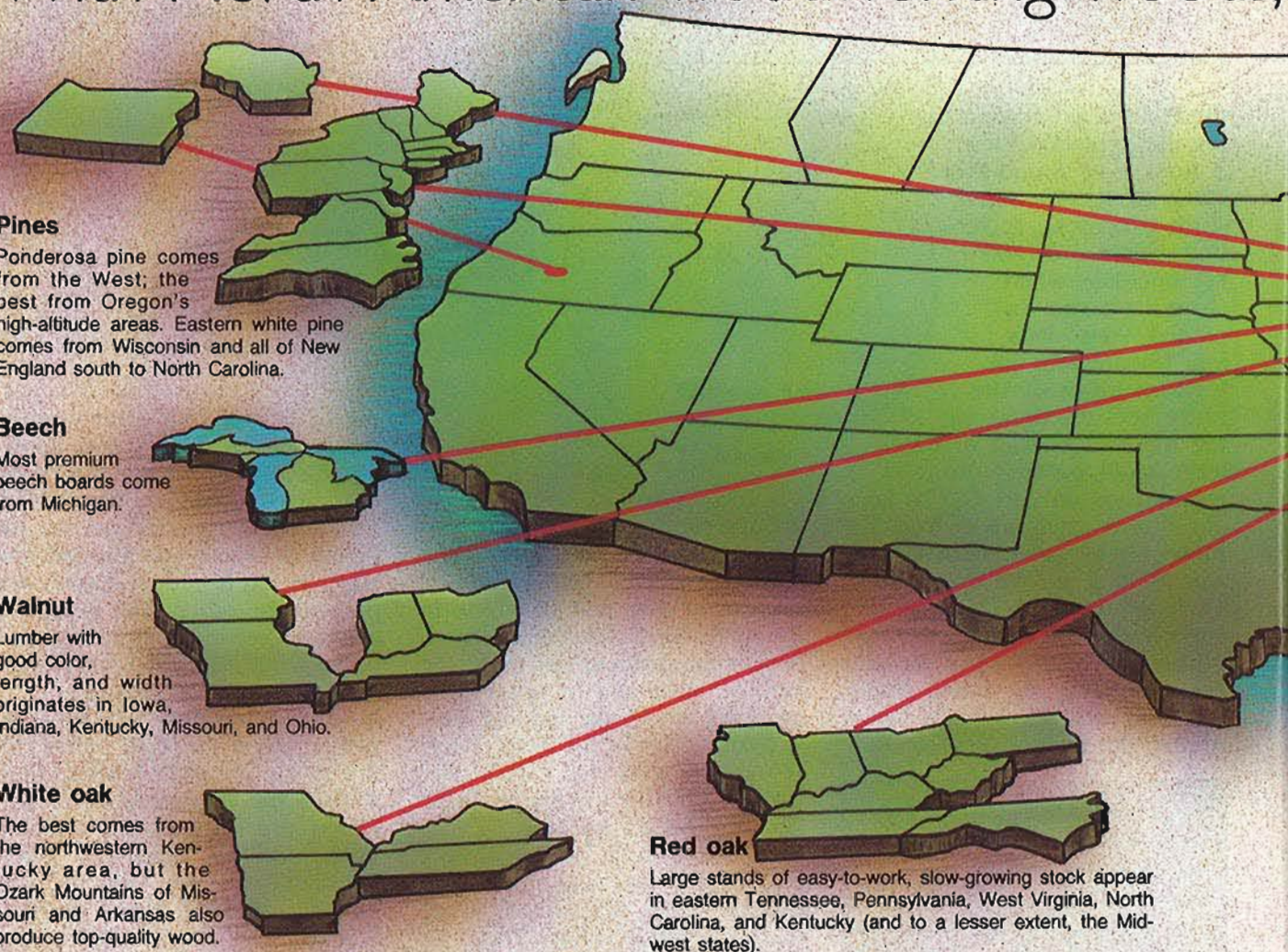
Buying Guide

• **Wood parts.** Two 1½"-diameter wooden balls, two ½" wooden buttons, two ¾" wooden buttons, and two ⅜"-diameter by 2¼"-long toy pegs. Kit no. WMSNAIL, $7.45 ppd. Cherry Tree Toys, P.O. Box 369, Belmont, OH 43718. Or call 800/848-4363 to order.

Produced by Marlen Kemmet
Project Design: Barrels of Fun, Mariposa, Calif.
Photographs: John Hetherington
Illustrations: Kim Downing

TRACKING DOWN

With North American woodworking woods,



Print this article

Wood is wood, right? Wrong! Hardwood trees with all the favored woodworking attributes of their individual species don't grow just anywhere. Neither do your favorite softwoods. Here's where professional lumber buyers seek super stock.

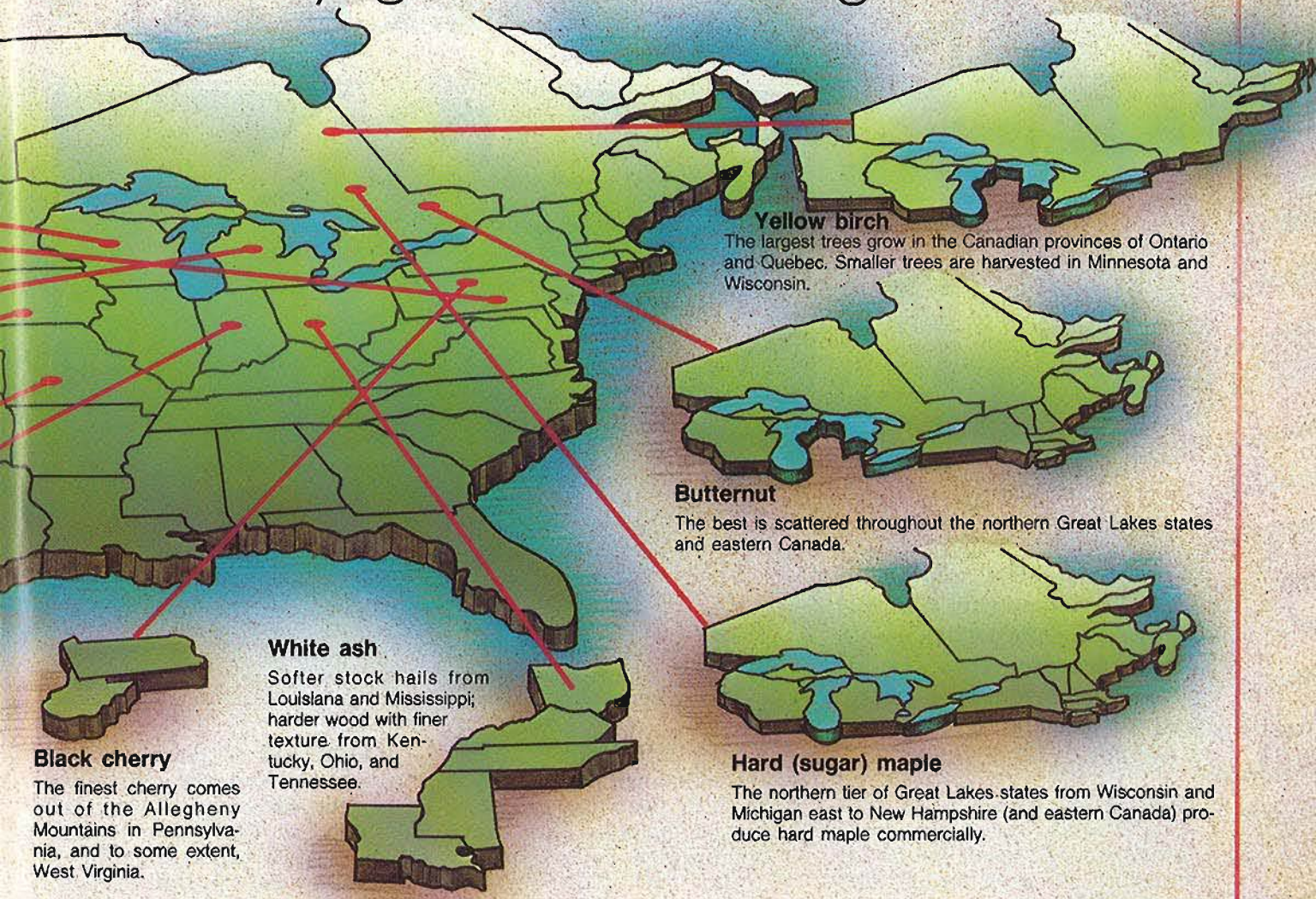
Have you ever wondered why one board, say of red oak, machines better than another from a batch you bought at your wood supplier? Or why a piece of ash stock you hefted in your friend's shop seemed heavier than one you have on hand? Well, commercial hardwood buyers will tell you that the reason for the difference stems from the wood's origin. And that also holds true for softwoods.

"By and large, the majority of the best North American hardwoods are harvested from the northerly tier of states, not the Deep South. That's from Wisconsin east to the Atlantic, then south through the Allegheny and Appalachian mountains to about the South Carolina border," claims Bob Stark. Bob is the vice-president in charge of lumber purchasing for the Kansas City-based Frank Paxton Lumber Company, one of the nation's largest marketers of cabinet-grade stock.

And exactly what does "best" mean? Bob Carr, Jr., president of the Educational Lumber Company (EDLCO), a mail-order firm specializing in Appalachian hardwoods, explains. "Hardwood—and softwood, too—from high altitudes or in cold climates—grows slower, is finer in texture, and thus easier to work than the faster-growing, less-dense woods

GOOD WOOD

where they grow makes a big difference



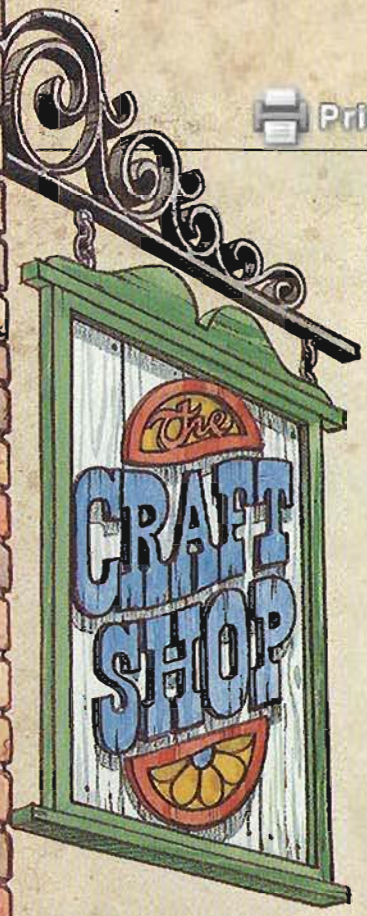
from warmer climates and lower altitudes," he says. "The slower-growing trees also have tighter [more even] grain and are less likely to be discolored from mineral deposits. In fact, the reason we are located in Ashville, North Carolina, is because this [the Appalachians] is where a lot of the good wood grows."

Of course, trees depend on soil nutrients, moisture, and climate for their existence. But within those needs, every species has a unique set of demands to achieve the optimum attributes that woodworkers prefer. That's why, even within a geographical region, some conditions prove better for the growth of quality hardwood than others. Choice white oak, red oak, and walnut, for instance, tend to anchor in the humus-covered bedrock (preferably limestone) of north-facing slopes, where moisture clings and coolness reigns.

But, even given these species' preferences for growing conditions within their range, those who commercially buy hardwoods and other trees on the stump still migrate toward traditional sources that deliver an abundance (rather than just a few trees) of the good wood. The map shown, *above*, illustrates the present origins of the most popular woodworking hardwoods and softwoods, according to the wood experts we talked to.

"That's good to know," you say, "but how can I find out where the wood I want to buy comes from?" It's simple. Just ask. Reliable dealers have your satisfaction in mind. They know where the best wood in a species comes from, and they purchase it there if they possibly can.

Illustrations: Mike Henry



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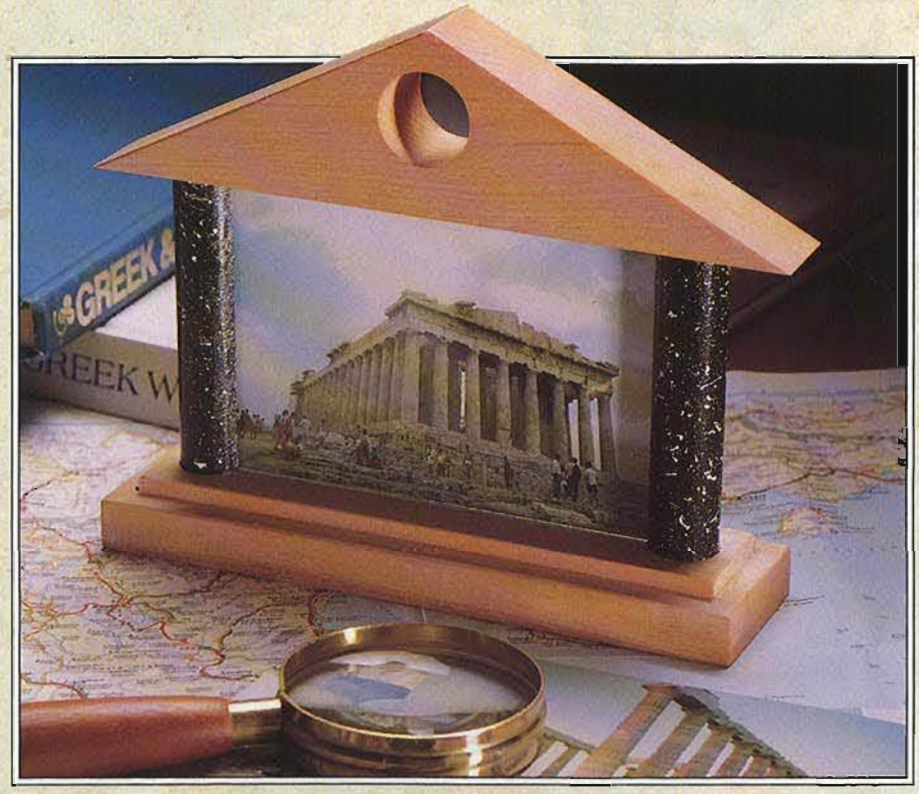
OLYMPIAN



Make a snapshot something special by displaying it in imposing surroundings—a Greek temple. This stately project goes together easily, and it's just the right size for a standard 3½×5" print.

***To build the frame,** you'll need stock ¾" and 1" thick. You could substitute 1 1/16" stock for the 1" material. We used maple, but whatever turns up in your scrapwood pile will work.*

Rip and crosscut the base to ¾×2×7¼". On 1×2×7¾" material, lay out the triangular top, and mark the center for the 1" hole where shown.

See the Bottom View of Top and Top View of Base drawings, and mark the location of the ¾" holes on both pieces. Bore the holes ¼" deep with a Forstner bit chucked into a drill press.

Change to a 1" bit, and bore the hole through the face of the top piece. Back it with scrapwood to prevent tear-out.

Fit your table-mounted router with a ¼" straight bit, and adjust the fence to center the bit side-to-side on the top piece. Now, rout a ¼"-deep groove connecting the ¾" holes. (We clamped stop-blocks to the fence 6⅜" from either side of the bit.) For a clean job, make several light cuts.

Next, make the dowel carrier shown in the Column Routing drawing. Nail two ¾×1¼×12" pieces of scrapwood to a ¾×3×12" piece (we used plywood). Leave a ¾" gap between the narrow pieces.

Place a ¾×10" dowel into the channel on the jig. Hold it in place with hotmelt glue at each end. Adjust the router-table fence to center the bit under the dowel, and rout the ¼×¼" lengthwise groove. Cut two 3⅞" lengths from the dowel for the columns.

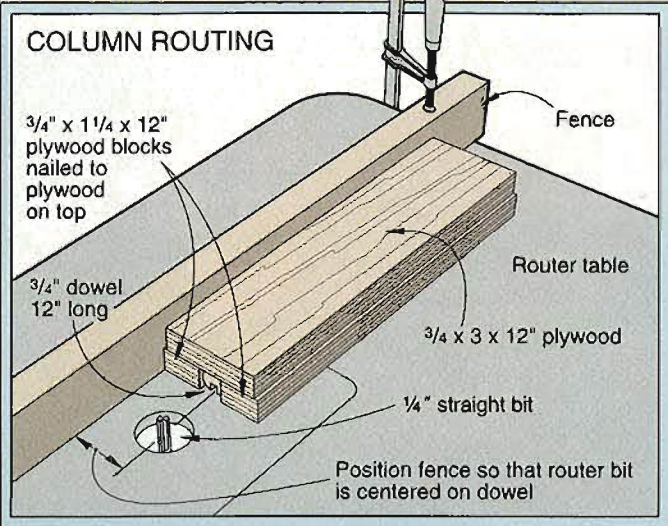
Change to a ⅜" piloted rabbeting bit, and rout the top of the base (the side with the holes) 3/16" deep on both ends and both sides. Again, take several light cuts.

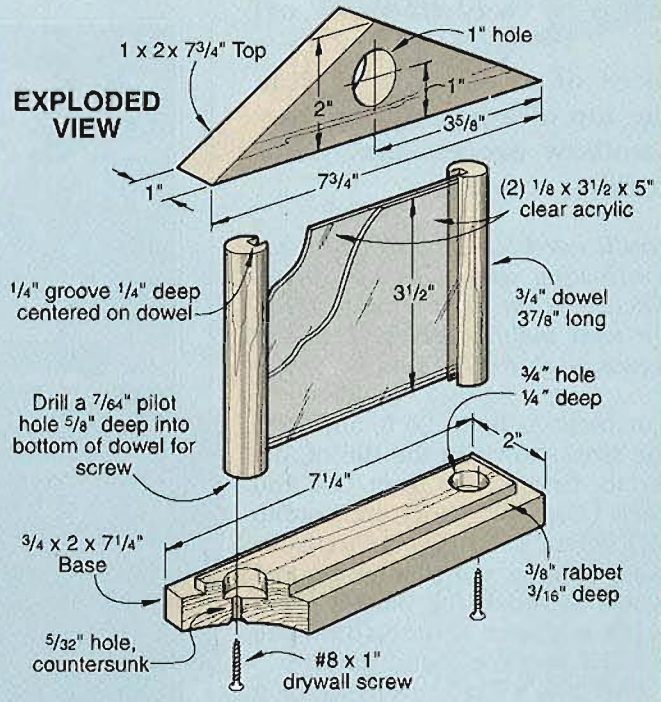
Bandsaw the top. Sand all parts, and then apply a clear finish to the base and top. Paint the columns black with white spatters to simulate marble. (For grooved, prepainted columns, see the Buying Guide, *opposite page.*)

Drill the 5/32" holes through the base where shown, and countersink them on the bottom. Place a column into each base hole, with the groove facing the center. Secure the columns with a 1" drywall screw from the bottom.

Sandwich your photograph between two ⅛×3½×5" acrylic sheets and slide them into the column grooves. Finally, set the top onto the columns.

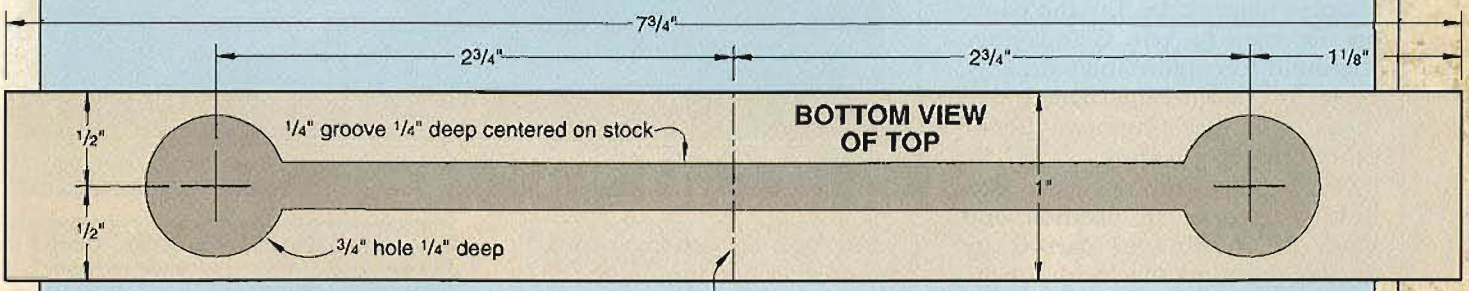
DISPLAY Heroic surroundings for a favorite photo

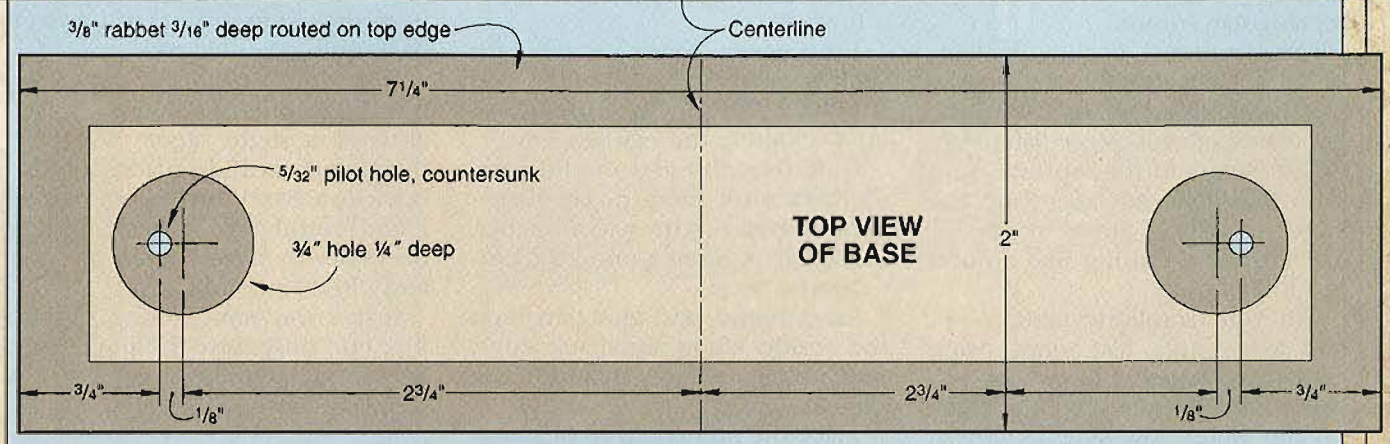




Buying Guide

Acrylic sheets, columns. Two 3½ × 5" acrylic sheets, $4 ppd. in the U.S. Add $4.50 for two grooved, finished columns. Schlabaugh & Sons, P.O. Drawer 327, Kalona, IA 52247, call 800/346-9663.



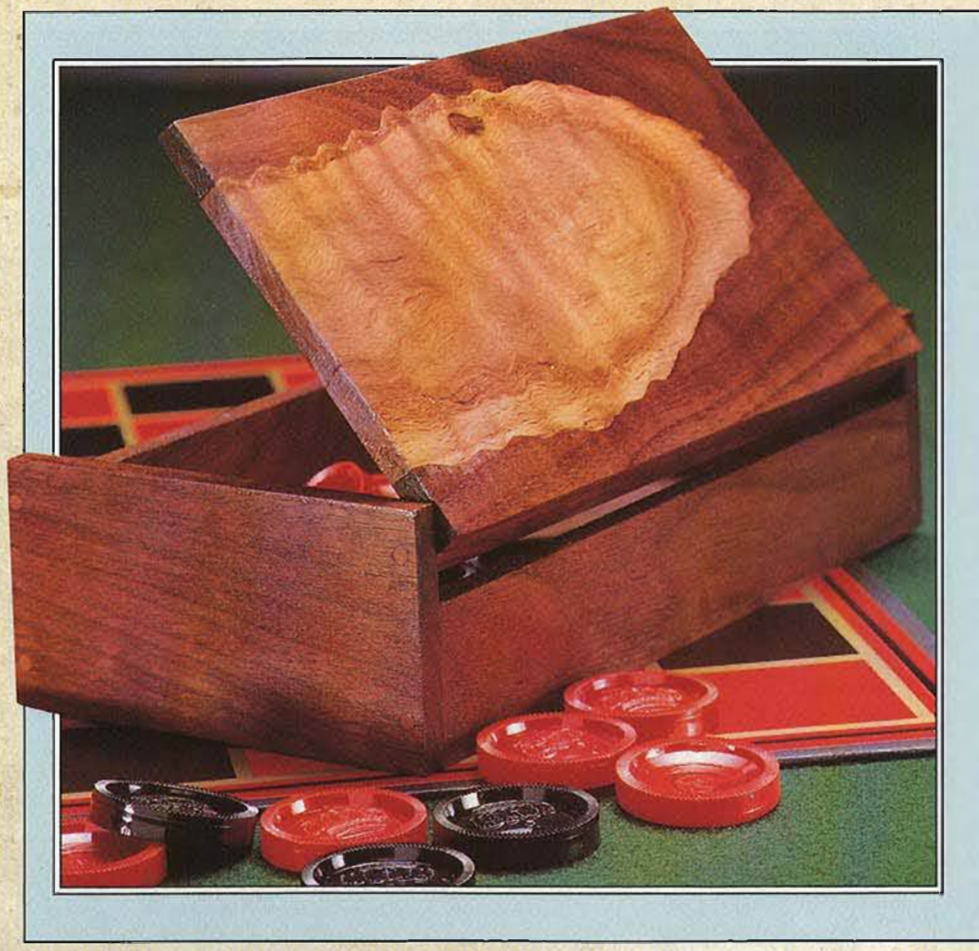


Project Design: ©Schlabaugh and Sons Photograph: Wm. Hopkins Illustrations: Mike Henry; Kim Downing

Print this article

BEAUTY AND

Looking for a great way to show off fine figure in a piece of wood? Inlay it into the top of a box. It's an easy scrollsaw process that yields striking results.



***You'll need** ¼"-thick stock in two contrasting woods, one with distinctive grain for the inlay piece. We used walnut for the box and figured oak for the inlay.*

Cut parts A, B, C, D, E, and F to the sizes shown in the Bill of Materials. Groove the front (B) and back (C), and rabbet the bottom (E) where shown in the joint detail. Select a contrasting figured wood as stock for part G. Start with a piece larger than the 4×7½" size you'll end up with.

Cut a 4×7½" opening in a sheet of plain paper. Lay the paper on the stock for part G and move it around to explore inlay designs. Look for boomerang-shaped patterns, diagonal lines, waves, or other attractive features.

When you find one you like, hold the paper in position and mark the outline of part G by drawing around the inside of the rectangular cutout.

Cut out part G, making it slightly larger than the lid (A) by sawing just outside the line. With the good side of each piece facing up, fasten part G to the top of the lid with double-faced tape. Sand the edges of part G flush to part A. Then, draw a cutting line around the inlay figure.

Tilt your scrollsaw table to 4°, and saw out a test inlay, using two taped-together layers of ¼"-thick scrapwood. Keep the inlay on the table's low side, as shown on the *opposite page.* Drop the inlay cut from the top layer into the bottom-layer opening to check for a flush fit.

If necessary, adjust the table tilt slightly and test again. When you achieve a flush fit, saw the lid inlay (G) along the marked lines.

Glue the inlay and the lid parts together on a scrap piece of plywood covered with waxed paper. Clamp by pinning around the outside with brads.

Sand the lid, and glue part F on the inside along the back edge. Assemble parts B, C, D, and E, but do not glue E.

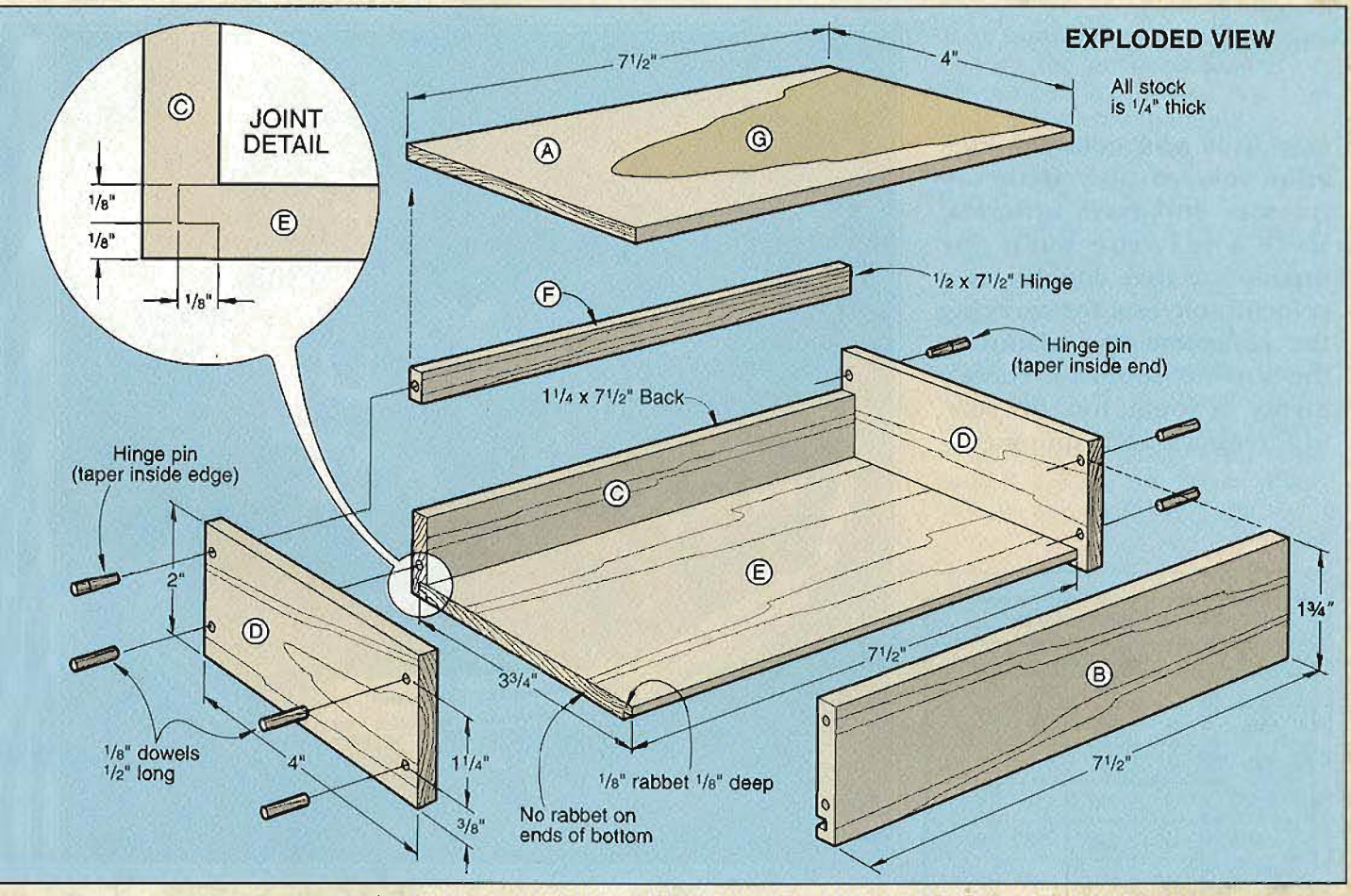
Place the hinged lid in position, and then secure it with masking tape. Drill the ⅛" holes ⅝" deep where shown. Glue the dowels into the front holes and lower back hole on each end.

Cut two 1" lengths of dowel for the hinge pins. Sand one end of each to a slight taper. With the pins temporarily in place, test the lid action. Sand the bottom of part F and round over its back edge as necessary to allow the lid to open and close smoothly.

Install the pins, gluing on the box end only. Saw the pins flush, and then sand the box. Apply a clear oil finish.

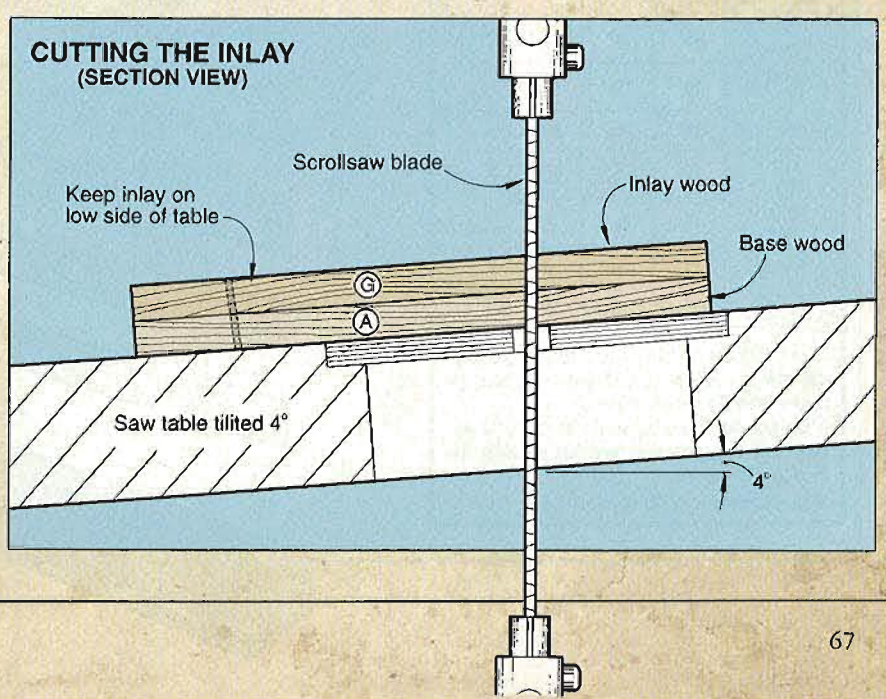
Illustrations: Mike Henry
Photograph: Wm. Hopkins

THE BOX A happy marriage of contrasting woods



Bill of Materials					
Part	Finished Size			Matl.	Qty.
	T	W	L		
A Lid	1/4"	4"	7 1/2"	W	1
B Front	1/4"	1 3/4"	7 1/2"	W	1
C Back	1/4"	1 1/4"	7 1/2"	W	1
D Ends	1/4"	2"	4"	W	2
E Bottom	1/4"	3 3/4"	7 1/2"	W	1
F Hinge	1/4"	1/2"	7 1/2"	W	1
G* Inlay	1/4"	4"	7 1/2"	O	1

*Before cutting this piece, follow the steps in the text to determine the inlay design.
Material Key: W-walnut, O-oak



Farmyard fun for the sandbox set

LITTLE RED

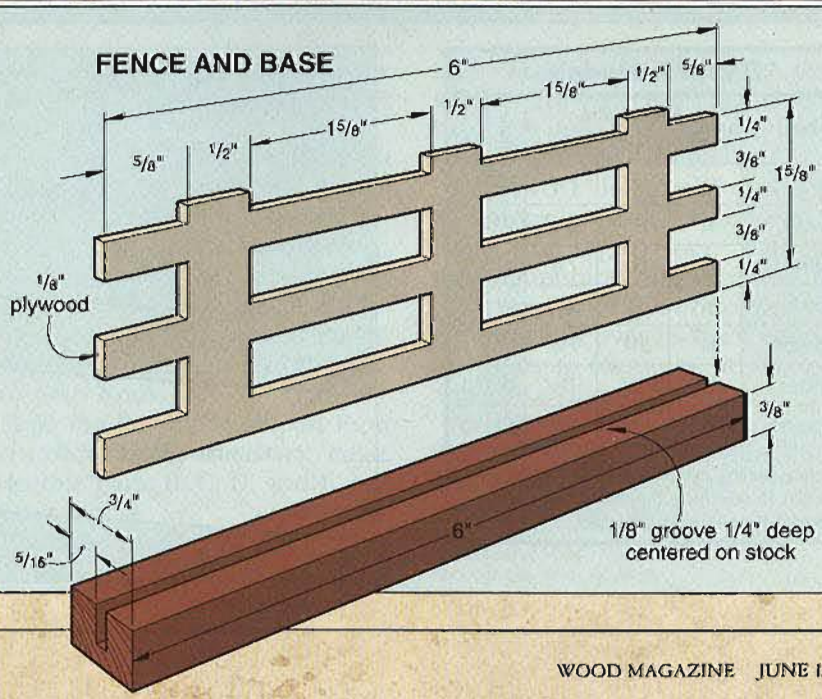
City kids and country kids alike love to play with toy tractors and farm animals. Here's just the barn for them—one that doubles as a colorful tote box for carrying the complete spread out to the sandbox south 40. There's plenty of room, too, for storing livestock and equipment.

Print this article

Bill of Materials

Part	Finished Size T	Finished Size W	Finished Size L	Matl.	Qty.
A ends	¼"	6½"	8"	P	2
B sides	¼"	4½"	11½"	P	2
C bottom	¼"	7½"	11½"	P	1
D roof	¼"	2¼"	12"	P	2
E loft door trim	⅛"	1 7/16"	2¾"	P	1
F door frame	⅛"	3"	4½"	P	1
G window trim	⅛"	1¼"	1¼"	P	8
H* doors	¼"	1¾"	2½"	P	2
I* door trim	⅛"	1¾"	2½"	P	2
J** fence base	⅜"	¾"	6"	B	6
K fence	⅛"	1⅝"	6"	P	6
L handle	½" dia. dowel		13⅜"	B	1

*Cut the doors (H) out of front (A) according to the how-to instructions. Use waste cut from the door frame (F) for door trim (I).
**Do not cut fence bases to length until you have cut the groove in accordance with the how-to instructions.
Material Key: P-Baltic birch plywood; B-birch



TOTE BARN

Rip and crosscut parts A, B, C, D, E, F, and G to the sizes shown in the Bill of Materials. Tilt your tablesaw blade to 45°, and rip the top edge of each part B, cutting so the width of the good face of the stock is 4¼".

Photocopy the Full-Sized Front Pattern for the barn on *page 70*. Adhere the pattern to one part A with spray adhesive or rubber cement. (You also could trace the pattern onto your stock with carbon paper.)

Stack the patterned piece on top of the other part A, holding them together with double-faced tape. Scrollsaw or bandsaw along the outside pattern line. Then, with a ½" Forstner bit chucked into a drill press, bore through the top piece and ⅛" into the bottom piece, a total depth of ⅜". Separate the two pieces.

Transfer patterns for parts E and F to the stock. Scrollsaw the loft door trim (E) along the outside pattern line, and the door frame (F) along the inside line. Glue both to the barn front (the piece with the hole through it).

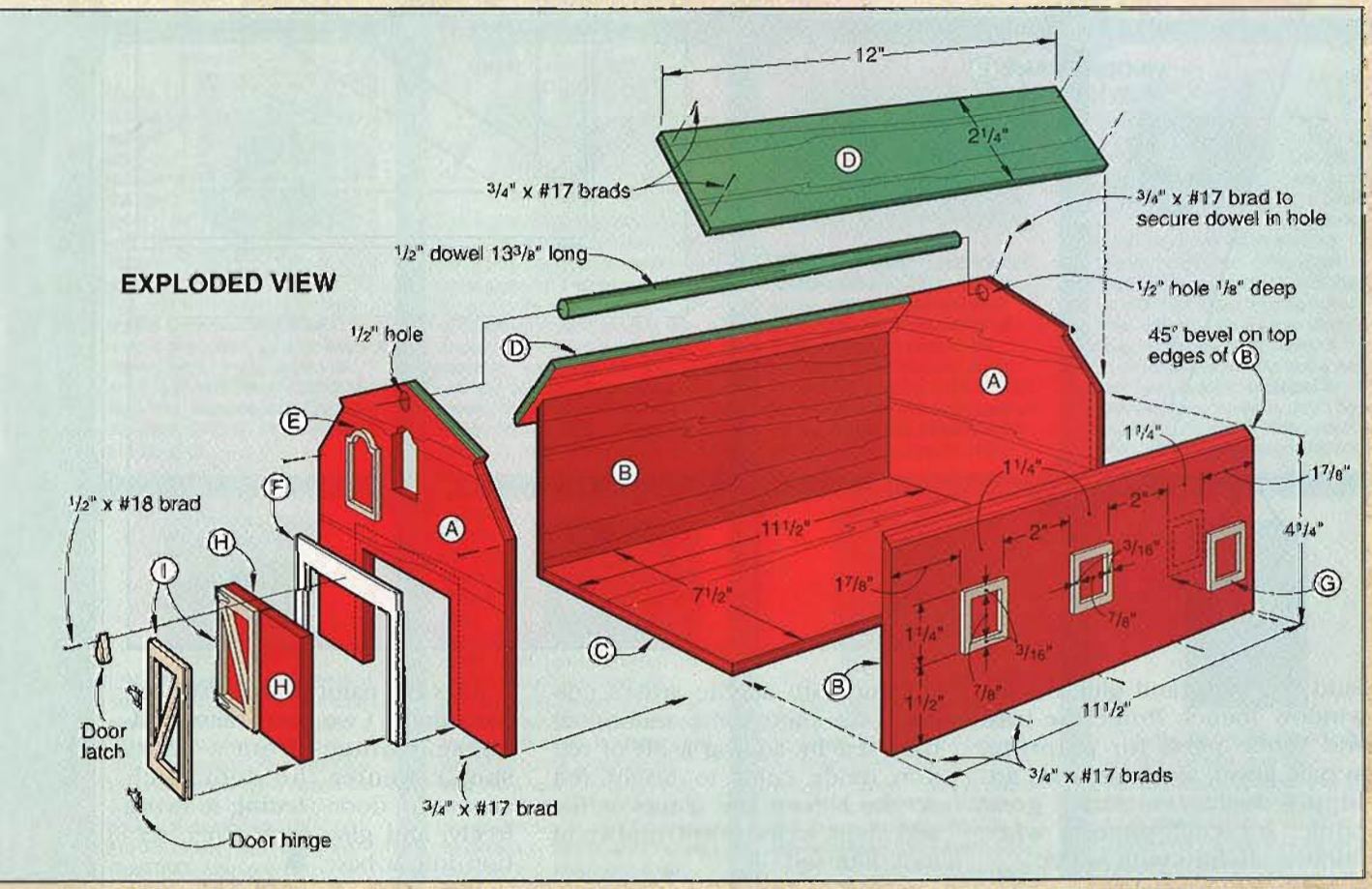
Drill a blade start hole where shown, and scrollsaw the loft-door opening. Then, saw the door opening, guiding on the inside edge of the door frame. Cut the waste in half for the doors (H). Scrollsaw the inside cuts on the door trim (I), and then glue the trim to the doors. Make mirror-image doors by flipping one trim piece over before gluing it on.

Sand the edges of the trim flush to the door edges. Cut out the window frames (G). Saw the door latch from ⅛" scrap material.

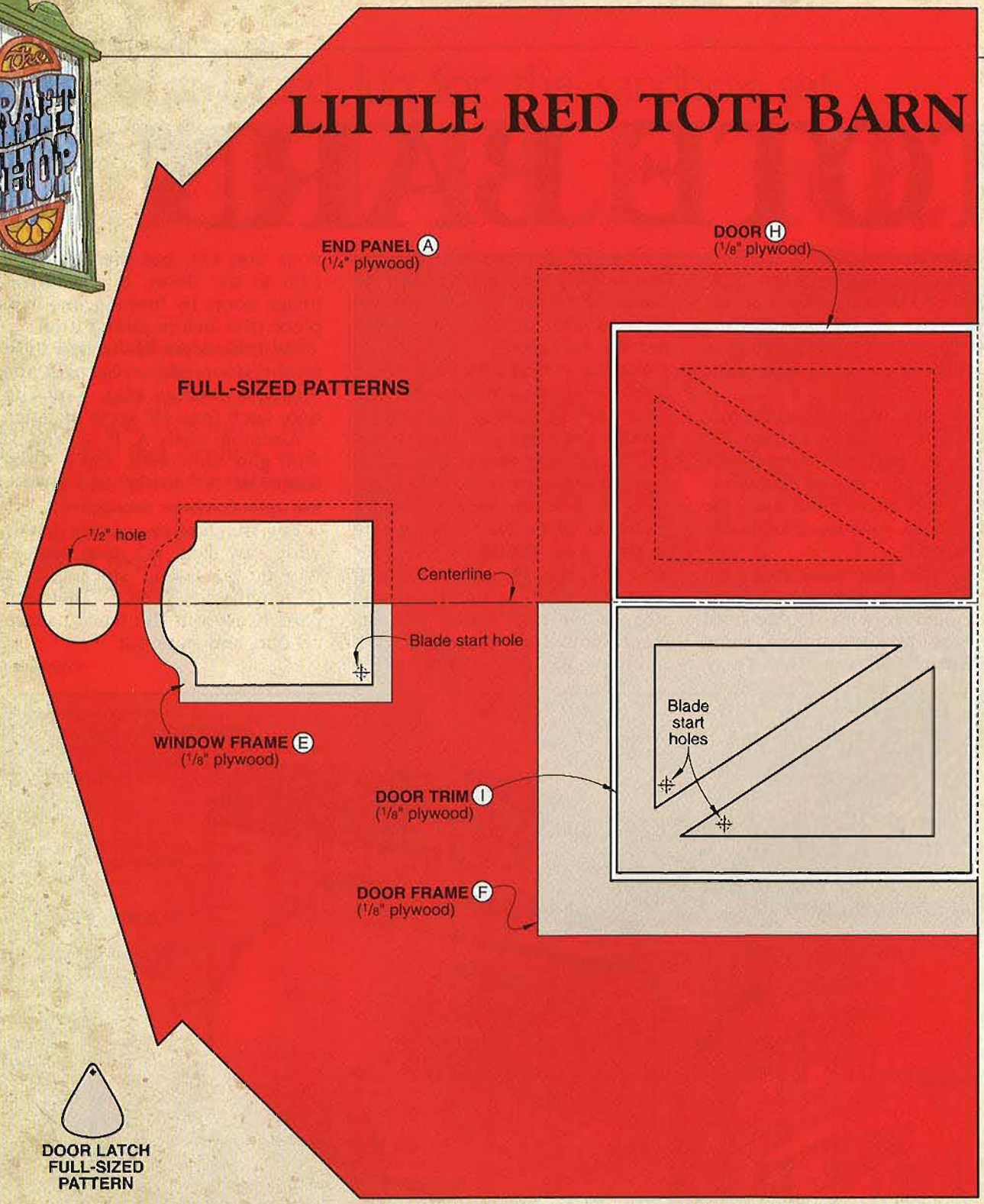
Assemble parts A, B, C, and D with glue and brads. Cut a 13⅜" length of ½" dowel, and glue it into place where shown.

For the fences, center a ⅛"-wide saw kerf ¼" deep lengthwise on ⅜ × ¾ × 37" stock. Cut six 6" lengths for parts J. Then cut parts K, lay out the fence pattern on one, and stack-cut.

Continued



LITTLE RED TOTE BARN



Sand the barn, and glue on the window frames. Prime the barn and fence parts for painting. Acrylic gesso, available from art-supply dealers, makes a great primer for craft projects when thinned slightly with water.

Paint with acrylic artist's colors. (We mixed the traditional barn red by adding a bit of red iron oxide color to bright red acrylic.) Paint the fences white and their bases burnt umber to look like soil.

After the paint dries, attach the barn doors (we used brass dollhouse T-hinges from a crafts shop). Center the door latch above the doors, letting it swing freely, and glue each fence section into a base.

Project Design: Larry Johnston Illustrations: Mike Henry; Kim Downing Photograph: Wm. Hopkins

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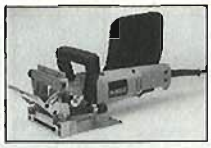

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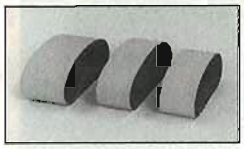

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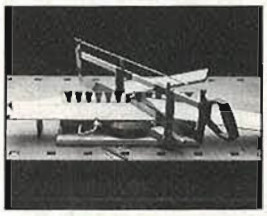

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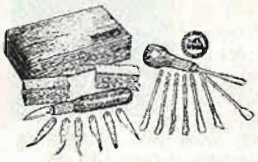

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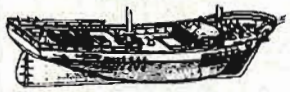

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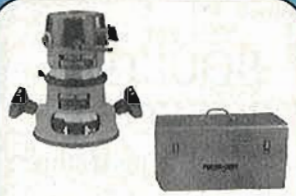

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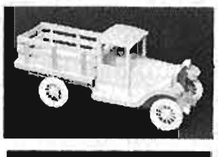

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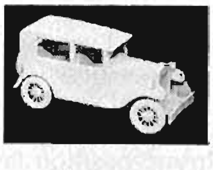

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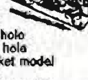

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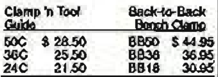

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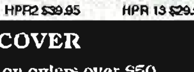

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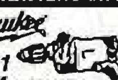

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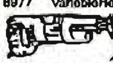

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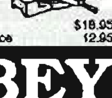

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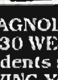

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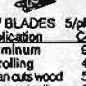

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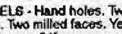

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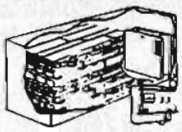

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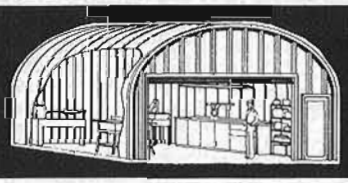

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So far, I've used the product mostly for disassembly of antique furniture. I've also used it in conjunction with normal clamps to help me position face-frame partitions. Because of its soft, plastic pads, I don't have to put small blocks of wood between the clamp's jaws and my workpieces to prevent marring.

—Tested by Chuck Hedlund

Quick-Grip spreader clamp by American Tool Companies, about $25 through woodworking catalogs or at hardware stores nationwide. For more information, call American Tool Companies at 402/683-2315.

Continued on page 78

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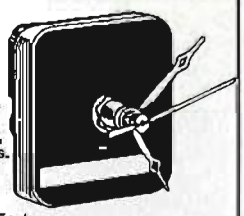

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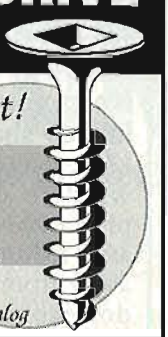

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Continued from page 76

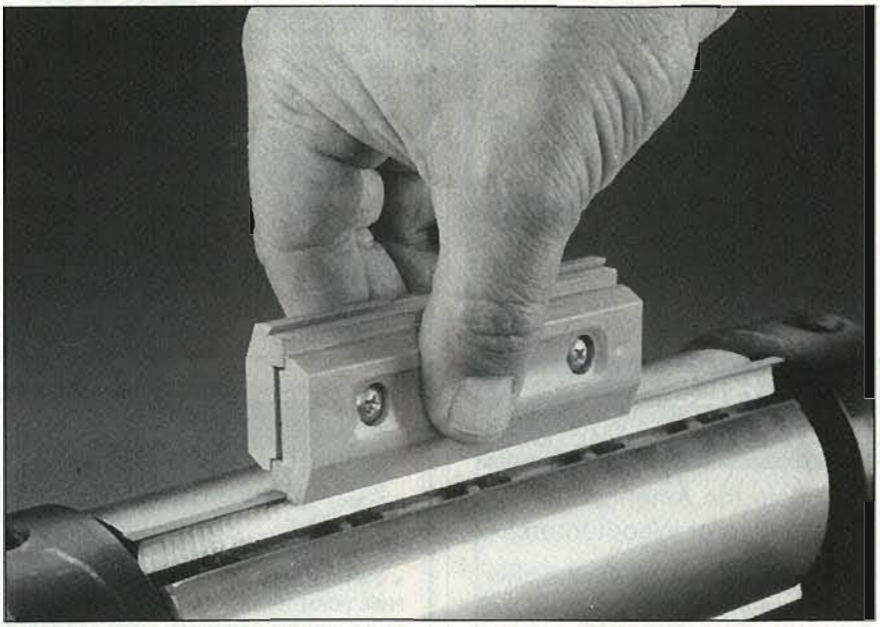
Keep your jointer and planer knives sharper longer

Let's face it: Few of us look forward to changing jointer and planer knives. It's time-consuming and tedious work that keeps us away from what we really like to do—work wood! Well, here's a product that helps postpone knife changes for as long as possible.

With the Hone-Mate, you hone knife edges without removing the knives from the machine. You simply dip the Hone-Mate in oil, and then give the knife edges a few strokes with each of the 180- and 400-grit stones contained in the Hone-Mate. The stones automatically index against the knife edge for perfect results every time.

I've made a practice of honing the knives in my planer and jointer at least once a week with this little sharpener. As a result, I'm rewarded with better cuts and I remove the knives from the machine only when they become nicked and require grinding.

—Tested by Bob McFarlin



Hone-Mate knife hone and holder, item 95-240, $27.50 ppd. from Woodworker's Supply. Call 800/645-9292.

Continued on page 80

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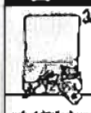

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Model	Description	List	TDT
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1186	3/8" VSR Drill 4 amp motor	$116	$64
1167	3/8" VSR Drill 4 amp motor	$121	$68
2600	3/8" VSR Drill 4.5 amp motor	$161	$85
2664K	Cordless ScruDrill Kit with case, 9.6 Volt	$262	$147
2665K	Cordless ScruDrill Kit with case, 12 volt	$282	$159
5073	1/2" Hammer Drill Kit with case, 5 amp	$300	$164
2670	1/2" Impact Wrench 7.5 amp motor	$271	$139

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6145	4 1/2" Angle Grinder Max. 10,000 RPM	$159	$94
6527	Super Sawzall Kit VS with case, 8 amp	$299	$158
6507	Sawzall Kit VS with case, 4 amp	$249	$134
6365	7 1/4" Circular Saw 13 amp motor	$209	$120
5597	3/8" Hammer Drill Kit VSR, 5 amp motor	$239	$139
6753-1	Drywall Screwdriver VSR, 3.5 amp motor	$144	$85
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7549	Bayonet Jig Saw VS 1" stroke, 4 amp motor	$260	$149
555	Plate Joiner with Case 5 amp motor	$320	$176
7334	Random Orbit Sander 3.7 amp motor	$221	$122
7335	Random Orbit Sander 5" var-speed, 3.7 amp	$241	$132
9647	Tiger Cub Saw Kit 4.5 amp motor	$205	$114
690	1 1/2 H.P. Router 10 amp motor	$255	$137
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3050VSRK	3/8" ScruDrill w/case 2 batteries, 9.6 volt	$284	$135
1581VS	Top Handle Jig Saw VS orbital, 4.8 amp	$275	$146
3380DVS	5" Dustless Sander random orbit, 2.3 amp	$189	$103
1273D	Dustless Belt Sander 4" x 24", 10.5 amp	$359	$194
1613EVS	3 1/4 HP Plunge Router VS, 15 amp motor	$460	$257
1604	1 3/4 HP Router 10 amp motor	$249	$132
1613EVS	2 HP Plunge Router VS 10.1 amp motor	$330	$189
1614EVS	1 1/4 HP Plunge Router VS 7.8 amp motor	$260	$149

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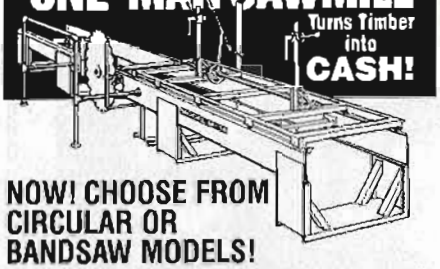

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Continued from page 78

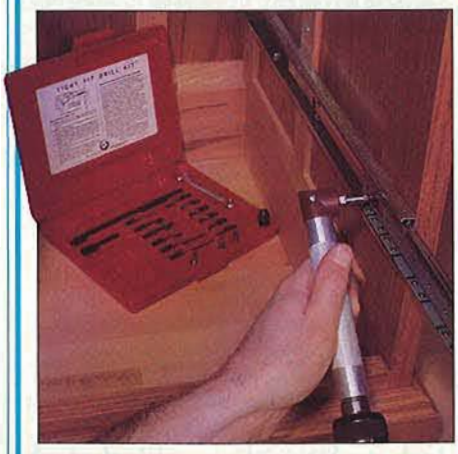
Drill kit gets you into and out of tight spots

Getting into tight areas in your woodworking projects with standard drills can be difficult or downright impossible. The Omni Tight-Fit Drill Kit helps you by converting your drill to a right-angle drilling or driving tool.

With this accessory, you can work in as little as 2" of space, because the right-angle attachment (shown at work in the photo *below*) has a threaded end for holding threaded drill bits (instead of a space-consuming chuck). The kit I tried comes with threaded drill bits in short lengths, a threaded holder for screwdriving bits, a collet adaptor for holding nonthreaded bits with ¼" shanks, various screwdriving bits, extender rods for deep, hard-to-reach spots, and a tightening wrench.

This sturdy accessory works well. The only time I experienced a problem was when I tried to back out an embedded screw. In this application, the threaded screwdriving-bit holder tended to come loose.

—Tested by Chuck Hedlund



Omni Tight-Fit Drill Kit, $69.95 for kit No. 00102 described and pictured above. You also can buy a kit with fewer attachments for $49.95. Attachments available separately from Omni Manufacturing, 12961 Sunnyside Place, Santa Fe Springs, CA 90670. Call 310/946-8444.

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102	DOOR HANGING KIT	328
314	4 1/2" TRIM SAW	135
315-1	7 1/4" BUILDERS SAW	122
345	SAW BOSS 6" CIRCULAR SAW	165
330	SPEED BLOCK FIN SANDER	56
332	QUIKSAND 5" RNDM ORB W/STIKIT PAD	63
333	QUIKSAND W/HOOK & LOOP, DUSTLS	73
334	QUIKSAND W/STIKIT, DUSTLESS	73
351	3" X 21" BELT SANDER	145
352	3" X 21" BELT SANDER W/DUST BAG	152
352VS	3" X 21" VS BELT SANDR W/DUST BAG	162
360	3" X 24" BELT SANDER W/DUST BAG	165
361	3" X 24" BELT SANDER	178
362	4" X 24" BELT SANDER W/DUST BAG	194
363	4" X 24" BELT SANDER	165
363-1	6 1/4" BUILDERS SAW	149
503	3" X 24" BELT SNDR W/BAG, X HVY DTY	359
504	3" X 24" BELT SNDR XTRA HEAVY DTY	349
505	1/2 SHT FIN SANDER	119
548	BAYONET SAW WORM DRIVE	192
550	*NEW POCKET CUTTER*	178
555	BISCUIT JOINER WITH STEEL CASE	169
617	7 1/4" BUILDERS SAW	122
690	1 1/2 HP ROUTER W/1/4" & 1/2" COLLETS	130
691	1 1/2 HP "D" HANDLE ROUTER	147
692	TRU-MATCH JOINING ROUTER	213
693	PLUNGE BASE ROUTER, 1 1/2 HP	169
695	SHAPER TABLE W/ 1 1/2 HP ROUTER	209
696	SHAPER TABLE	125
2620	3/8" VSR DRILL, 0-1200 RPM W/CHK	99
2621	3/8" VSR DRILL, 0-1200 RPM KEYLESS	99
2640	DRYWALL VSR DRVR, 4.5 A, 0-4000 RPM	75
5003	DOVETAIL TEMPLATE	78
5009	MORTISE & TENON JIG	48
5116	OMNI JIG	259
5556	BISCUIT JOINER TILT FENCE	45
6614	1/2" ELCTRNC VSR DRILL 0-750 RPM	120
6615	SAME AS ABOVE BUT W/ KYLS CHUCK	120
6331	PLUNGE ROUTER BASE	73
7116	*NEW 24" OMNIJIG*	299
7310	LAMINATE TRIMMER, 5.6 AMP	89
7312	OFFSET TRIMMER	126
7319	TILT BASE TRIMMER	101
7335	5" RANDOM ORBIT SANDER, VS	129
7336	6" RANDOM ORBIT SANDER, VS	132
73003	RANDOM ORBIT DUST EXTRACTION	24
7349	BAYONET SAW	115
7518	3 1/4 HP FIXED BASE ROUTER-5 SPEED	264
7519	3 1/4 HP FIXED BASE ROUTER-1 SP	229
7536	2 1/2 HP FIXED BASE ROUTER	199
7537	2 1/2 HP FIXED BASE "D" HNDL RTR	209
7538	3 1/4 HP PLUNGE ROUTER-1 SPEED	229
7539	3 1/4 HP PLUNGE ROUTER-5 SPEED	264
7549	TOP HANDLE BAYONET SAW	143
7549	BARREL GRIP BAYONET SAW	143
7700	*NEW 10" LASERLOC MITER SAW*	339
9110	PORTA PLANE KIT W/CASE, CRDD BLD	264
9314	4 1/2" TRIM SAW KIT	152
9315	7 1/4" BUILDERS SAW KIT	139
9345	SAW BOSS 6" CIRCULAR SAW KIT	125
9367	3 1/4" PLANER KIT	139
9548	WORM GEAR BAYONET SAW KIT	204
9617	7 1/4" BUILDERS SAW KIT	139
9637	TIGER SAW VAR SPD RECIP SAW KIT	140
9647	TIGER CUB RECIP SAW KIT	115
9652	VERSA-PLANE KIT	309
9653	12 V, 3/8" CRDLS KIT, VS KEYLESS CHK	152
9653S	SAME AS ABOVE BUT W/2 BATTERIES!	179
9654	12 V, 1/2" CRDLS KIT, VS W/GEARED CK	162
97310	LAMNT TRIMMR KIT W/4 BASES & CS	192
97751	1/2" VS, 2 SPD HAMMER DRILL KIT	145

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EY6207BC	12V, 1/2" KYLS CHK, VSR, CRDLS W/15 MIN CHARGE & CASE	215
EY6905BC	12V, 3/8" CRDLS HAMMER DRILL W/15 MIN CHARGE & CASE	199

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1195VSR	3/8" VAR SPEED REV HAMMER DRILL	129
1581VS	TOP HANDLE JIG SAW, VS	139
1581DVS	SAME AS ABOVE BUT DUSTLESS	169
1582VSC	CLIC BARREL HANDLE JIG SAW, VS	139
1582DVS	SAME AS ABOVE BUT DUSTLESS	169
1272D	3" X 24" DUSTLESS BELT SANDER	179
1273D	4" X 24" DUSTLESS BELT SANDER	189
1273DVS	4" X 24" VS DUSTLSS BELT SANDER	199
1347AK	4 1/2" MINI GRINDER W/CASE	105
1370DEVSK	6" VS DSTLS RNDM ORB SNDR KIT	259
1420VSR	DRYWALL DRIVER, 4.6 A, 0-4000 RPM	84
1600	2 1/4 HP "D" HANDLE ROUTER	250
1601	1 HP ROUTER	109
1602	1 1/2 HP HANDLE ROUTER	134
1603	1 1/2 HP "D" HANDLE ROUTER	142
1604	1 3/4 HP ROUTER	134
1608	LAMINATE TRIMMER	64
1608U	UNDERSCRIBE TRIMMER	117
1609K	INSTALLERS KIT WITH 3 BASES	174
1609KX	DELUXE INSTALLERS KIT W/4 BASES	197
1613	1 3/4 HP PLUNGE ROUTER	163
1613EVS	2 HP VAR SP PLUNGE ROUTER	183
1614	1 HP PLUNGE ROUTER	127
1614EVS	1 1/4 HP VAR SP PLUNGE ROUTER	149
1615EVS	3 1/4 HP VAR SP PLUNGE ROUTER	254
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3050VSRK	9.6 V, VSR CRDLS DRILL W/2 BAT, CS	134
3258	3 1/4" PLANER	136
3292DVS	5" VS DUSTLESS RANDOM ORBIT	96
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11304	THE BRUTE BREAKER HAMMER	1195
11316	DEMOLITION HAMMER	639

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C8FB	8 1/2" SLIDE COMPOUND MITER SAW	477
CJ65V2	TOP HANDLE JIG SAW W/CASE	156
F30A	3.5" PLANER, 8.3 AMP	179
M8V	VAR SPEED PLUNGE ROUTER, 1/4"	151
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SV12SA	4 3/8" PALM GRIP SANDER	46
SV12SD	4 1/2" ORBITAL SANDER W/DUST BAG	183
SV12V	4 1/2" ORBITAL W/BAG, VAR SPEED	144
SB75	3"x21", 2 SPEED BELT SANDER	136
SB9T	3"x24", 2 SPEED BELT SANDER	150
SB10T	4"x24", 2 SPEED BELT SANDER	166
D10DFKBE	9.6V, CRDLS DRILL KIT W/2BAT & CS-KYLS	149

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LU89M010	10" X 72T TCH NON FERROUS METAL	59
LU91M008	8 1/2" X 48T FOR COMPOUND MITER	43
LU92M010	10" X 80T TCH - DEST FOR LAMINATES	59
LU88M010	10" X 60 T TCH LAMINATES OR WOOD	69
TK206	10" X 24T THIN KERF RIPPING	25
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TK906	10" X 50T THIN KERF CROSSCUT	30
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WC104	4 PC WOOD CHISEL SET W/CASE	39
WC106	6 PC WOOD CHISEL SET W/CASE	49
WC110	10 PC WOOD CHISEL SET W/CASE	89
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FC107	7 PC CARBIDE FORSTNER BIT SET	72
SD306	6" SAFETY DADO WITH CASE	112
SD308	8" SAFETY DADO WITH CASE	116
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1870	2 1/4 HP PLNG RTR, 12 AMP, 23,000 RPM	150
1875	2 1/4 HP EVS PLNG RTR, 10-23,000 RPM	174
2735-04	12V CRDLS VSR KYLS W/2 BAT, CASE	156
2970-02	3 3/8" CRDLS TILE CTTR, 12V W/WTR BTL	159
2977-02	3 3/8" CRDLS CIRCULAR SAW KIT, 12V	144
3330	16" SCROLL SAW	135
3370	4" BELT/6" DISC SANDER	135
3380	8" DRILL PRESS	135
3400	10" TABLE SAW	179
4560-02	JIG SAW KIT, VS, 3.5 AMP W/BLOWER	95
4560-02	JIG SAW KIT, VS W/ORBITAL ACTION	106
5510	5 1/2" PROFESSIONAL CIRCULAR SAW	108
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0375-1	3/8" CLOSE QUARTER DRILL	125
0406-1	9.6V KYLS CDLS DRILL KIT W/2BAT, CS	165
0107-1	SAME AS ABOVE BUT 12 VOLT	179
3002-1	ELECTRICIANS RIGHT ANGLE DRILL KIT	202
3102-1	PLUMBERS RIGHT ANGLE DRILL KIT	202
3107-1	1/2" VSR RIGHT ANGLE DRILL KIT	207
5370-1	1/2" VSR, 2 SPEED HAMMER DRILL	166
5397-1	3/8" VSR HAMMER DRILL W/CS & BITS	137
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5681	2 HP ROUTER	199
5925	3" X 24" BELT SANDER W/DUST BAG	235
5936	4" X 24" BELT SANDER W/DUST BAG	255
6012	1/3 SHEET FINISHING SANDER	115
6014	1/2 SHEET FINISHING SANDER	120
6016	1/4 SHEET FINISHING SANDER	99
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6142	4 1/2" MINI GRINDER KIT COMPLETE	112
6256	TOP HANDLE JIG SAW	143
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6507	VAR SPEED SAWZALL W/BLADES & CSE	139
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6511	2 SPEED SAWZALL W/BLADES & CASE	123
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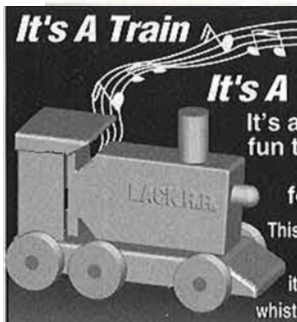

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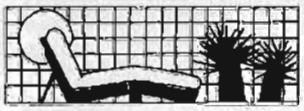

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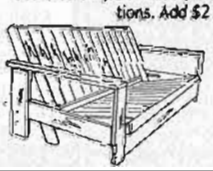

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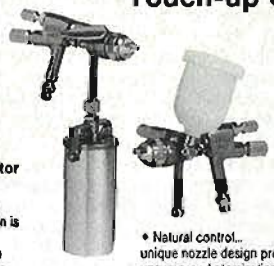

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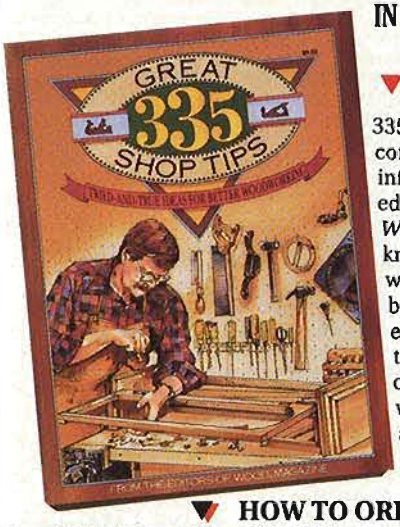

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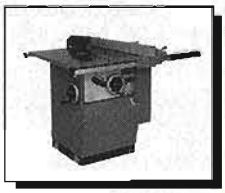

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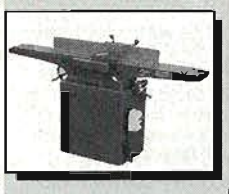

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Model		List	Sale
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23-880	6" Bench Grinder 1/4 HP	88	75
23-680	8" Bench Grinder 1/2 HP	151	115
11-950	8" Drill Press	199	144
31-050	1" Belt sander 2.0 amp	104	78
31-460	4" Belt/Disc Sander	198	135
31-340	1" Belt/8" Disc Sander	268	195
31-080	1" Belt/5" Disc Sander	134	94
40-560	16" 2 speed Scroll Saw	266	188
11-990	12" Bench Drill Press	276	224
11-090	32" Radial Bench Drill Press	399	294
43-355	3/4" Shaper 1-1/2 HP	964	709
43-505	1/2" Bench Router/Shaper	399	279
22-540	12" Bench Top Planer	595	398
36-220	10" Compound Mitre Saw	350	239
28-180	Bench Band Saw	232	165
40-640	20" Bench Scroll Saw	466	318
23-675	NEW 6" Grndr/3x24Belt Sndr	141	105
14-600	Hollow Chisel Mortiser	668	448
46-700	12" Wood Lathe	548	434
34-761	10" Unisaw 1-1/2 HP	1715	1450
	Unisaw has $100 rebate-price is before rebate		
33-990	10" Radial Arm Saw	818	625
37-280	6" Motorized Jointer	488	399
50-179	3/4 HP 2 stage Dust Collector	483	335
70-200	20" Floor Drill Press	1049	815
33-055	8-1/4" Sawbuck comp w/legs	865	595
34-330	8-1/4" Table Saw 13A	343	234
32-100	Station Plate Jointer	645	358
36-040	8-1/4" Compound Mitre Saw	224	165
34-915	30" Unifence	385	239
34-897	50" Delta Unifence	525	285
36-755	10" Tilt Arbor Saw	1264	950
34-444	Contractors Table Saw	850	615
17-900	16-1/2" Floor Drill Press	495	399
40-601	18" Scroll Saw with stand	942	745
22-662	13" Planer complete - 2HP	1499	1229
33-060	NEW "Sidekick" Miter Saw	499	368
14-070	NEW 14" Floor Drill Press	450	335
50-075	Dust Collector/Sweeper 3/4 HP	360	245
28-283	14" Band Saw w/enc. stand	910	739
34-445	34-444 Saw w/30" Unifence	1200	789
37-154	DJ15 6"Jointer w/3/4HPmotor	1420	1160

MILWAUKEE TOOLS

6527	NEW Sawzall with case	299	164
6528	above Sawzall w/wired cord	295	164
6125	NEW 5"Random Orbit Sander	200	119
6126	NEW 6"Random Orbit Sander	205	125
0399-1	12V cordless Drill Kit comp	304	164
0402-1	above Drill w/keyless chuck	309	168
0395-1	9.6V cordless Drill with case	264	155
0224-1	3/8" Drill 4.5 amp magnum	203	114
0234-1	1/2" Drill 4.5A mag 0-850 rpm	223	119
0244-1	1/2" Drill 4.5A mag 0-600 rpm	223	119
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	189	107
0228-1	3/8" Drill 3.5 amp 0-1000 rpm	183	100
0375-1	3/8" close quarter Drill	223	127
0379-1	1/2" close quarter Drill	254	145
6539-1	cdls Screwdriver 190 rpm	127	75
6546-1	cdls Scrwdvr 200 & 400 rpm	138	82
5399	1/2" D-hdle Hammer Drill Kit	319	184
6750-1	Drywall Gun 0-4000 5 amp	162	93
6507	Original SawZall with case	249	135
6014	Orbital Sander 1/2 sheet	214	118
8977	variable temp. Heat Gun	122	74
5397-1	3/8" var. spd Hammer Drill Kit	244	138
5371-1	1/2" var. spd Hammer Drill Kit	335	185
5377-1	5371-1 w/keyless chuck	335	185
3107-1	1/2" v/spd right angle Drill Kit	370	198
6754-1	Drywall Gun 0-4000 5.4 amp	192	108
3300-1	1/2" var. spd right angle Drill	329	184
5680	Router 2 HP - 12 amp	355	198
0235-1	1/2" Drill w/keyless chuck	223	125
6145	4-1/2" Grinder 10,000 rpm	162	98
6142	6145 with case & accessories	199	129
6749-1	Drywall Gun 0-2500 5.4 amp	224	122
6365	7-1/4" Circular Saw 13 amp	214	120
6366	6365 w/case & carbide blade	224	125
6368	6365 w/nce carb. blde & cse	244	138
6369	New 7-1/4 Circ saw w/brake	245	149
6377	7-1/4" Worm Drive Saw	324	178
6256	Top Handle Jig Saw	220	142
6490	10" Mitre Saw	444	269

FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur A.T.B 10"	40	67	39
LU82M010	Cut-off 10"	60	90	49
LU84M011	Comb 10"	50	76	40
LU85M010	Super Cut-off10"	80	112	56
LM72M010	Ripping 10"	24	66	37
LU73M010	Cut-off 10"	60	82	44
LU87M010	Thin Kerf 10"	24	70	38
LU88M010	Thin Kerf 10"	60	86	43
LU98M010	Ultimate 10"	80	125	65
LU91M010	Compnd Mitre 10"	60	60	54
SC-001	Blade Stabilizers (pair) for 5/8" arbor			11.99
TK206	10" Framing	24	38	25
TK303	7-1/4" Finishing	40	37	22
TK306	10" Finishing	40	46	25
TK906	10" Combo	50	52	29
SD306	6" Dado - Carbide		215	109
SD308	8" Dado - Carbide		229	119
F0	1-3/4" x 5/8" Biscuit 1000 Qty		32	29
F10	2-1/8" x 3/4" Biscuit 1000 Qty		32	29
F20	2-3/4" x 1" Biscuit 1000 Qty		34	29
FA	Assorted Biscuits 1000 Qty		34	29
FB100	16 piece Forstner Bit Set		331	174
94-100	5 pc. Router Bit Door System		319	159

The following FREUD Tools have a $20.00 rebate!
Price shown is before rebate

FT2000E	3-1/4 HP v/spd Plunge Router	410	199
JS100	Biscuit Jointer with case	304	162

MAKITA TOOLS

Model		List	Sale
6070DW	3/8" v/spd Reverse Drill 7.2V	124	74
6071DWK	above Drill w/removable batt.	194	108
5090DW	3-3/8" Saw Kit 9.6 volt	250	138
6010SDW	3/8" cordless Drill Kit 7.2V	96	69
ML900	Incandescent Flashlight 9.6V	Sale	37
6093DW	v/spd Drill w/clutch-complete	261	135
6093DWE	6093DW Drill Kit w/2 batteries	270	139
6095DWE	6095DW Drill Kit w/2 batteries	270	139
6011DW	NEW 12V Drill Kit complete	320	168
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28
5007NBA	7-1/4" Saw w/electric brake	243	125
5008NBA	8-1/4" Saw w/electric brake	301	163
B04510	1/4 sheet Pad Sander	93	54
9900B	3" x 21" Belt Sander w/bag	283	145
9924DB	3" x 24" Belt Sander w/bag	299	159
4301BV	Orb. var. spd Jig Saw 3.5A	262	142
JR3000V	var. speed Recip Saw w/case	239	125
LS1020	10" Mitre Saw 3.5 amp	571	299
9820-2	Blade Sharpener	394	194
1900BW	3-3/4" Planer with case	221	116
1911B	4-3/8" Planer 7.5 amp	255	138
9207SPC	7" Sander/Polisher	294	154
9514B	4" Disc Grinder 4.6 amp	100	65
3601B	1-3/8 HP Router	261	139
B04550	1/4 sheet Pad Sander w/bag	91	54
DA3000R	3/8" Angle Drill	285	149
2708W	8-1/4" Table Saw	519	259
2711	10" Table Saw with brake	868	485
6404	3/8" Drill Rev. 0-2100 rpm 2 A	105	57
6510LVR	3/8" Drill Rev. 0-1050 rpm	152	79
6820V	0-4000 rpm Drywall Gun 5.2 A	160	89
6013BR	1/2" Drill Rev. 6 amp	263	138
5402A	16" Circular Saw 12 amp	675	345
3612BR	3 HP Plunge Router	347	169
9401	4" x 24" Belt Sander w/bag	343	174
4302C	var. speed Orbital Jig Saw	283	189
5077B	7-1/4" Hypoid Saw	260	138
LS1030	NEW 10" Mitre Saw	428	195
5007NB	7-1/4" Circular Saw 13 amp	214	114
2012	12" Portable Planer	913	465
LS1011	10" Slide Compound Saw	859	498

SIOUX TOOLS

8030	New 3/8" var/spd Drill	238	148
8000	3/8" var/spd close qtr Drill	201	128
690	5" Air Random Orbit Sander	139	138
690VV	690 w/ventun dust collection	281	178
658	5" Air Rndm Sander-dual action	261	158

SENCO AIR NAILERS

SFN1	Finishing Nailer 1" - 2"	377	255
SFN2	Finish. Nailer 1-1/2" - 2-1/2"	571	375
SN325	Nailer 1-7/8" - 3-1/4"	665	395
SN4	General purpose 2" - 3-1/2"	685	468
SLP20	New Pinner w/cse 5/8" - 1-5/8"	399	269
SKS	Stapler 5/8" - 1-1/2"	351	239

BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	355
N12B-1	Coil Roofing Nailer	845	409
N60FN-2	Finishing Nailer	625	329
T31	Brad Nailer	270	149
CWC100	1 HP Pancake Compressor	445	289

EXCALIBUR Fences & Tables

TT45R24L9	24" Fence	369	299
TT45R50L12	50" Fence	399	329
EXSLT30	Sliding Table	599	475
EXSLT60	Sliding Table	745	585

SKIL SIZZLERS

77	7-1/4" Worm Drive Saw	230	138
2735-04	12 volt cordless Drill Kit	210	132
2735-04X	2735-04 with keyless chuck	235	132
1605-02	NEW Biscuit Jointer w/case	200	125
3400	10" Table Saw - Bench Top	250	179
3330	16" Scroll Saw - Bench Top	200	135
3380	8" Drill Press - Bench Top	200	135

PANASONIC CORDLESS

EY6205BC	NEW variable speed 12 volt Drill w/15 minute charger & case	390	179
EY6281BC	NEW variable speed 9.6 volt Drill w/15 minute charger & case	350	168
EY571B	var. speed 9.6 volt Drill Kit	239	134
EY571BC	EY571B with case & 2 batt	275	145
EY6207BC	NEW 12 volt 1/2" Drill w/keyless chuck var. speed w/15 minute charger & case	421	218
EY6205EOK	Same as EY6205BC but battery has 40% more life & 20% more torque	368	189

PASLODE IMPULSE GUNS

IM250	Impulse Finish Nailer Kit	849	615
IM325	Impulse Framing Nailer Kit	849	615
402500	Extra Battery	Sale	42.95

HITACHI TOOLS

C7SB	7-1/4" Circular Saw	214	109
C7BD	7-1/4" Circular Saw with brake	230	118
M12V	NEW 3 HP var. speed Router	447	225
TR12	Plunge Router 3 HP	354	167
F1000A	12" Planer/6" Jointer	2835	1549
C10FA	10" Deluxe Mitre Saw	538	268
C12FA	NEW 12" Mitre Saw	632	298
C8FB	8-1/2" Slide Compound Saw	899	445
FREUD	LU91M008 8-1/2" Carb bld 48 t	68	43
C15FB	15" Mitre Saw	745	368
FREUD	LU85M015 15" c/o/o 108 tooth	180	99

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DW945K	3/8" 12 volt cordless Drill Kit with 2 batteries	284	169
DW944K	3/8" 9.6 volt cordless drill kit with 2 batteries	264	149
DW610	1-1/2 HP 2 handle Router	250	138
DW411	1/4 sheet Palm Sander, 1.7 amp	87	54
DW100	3/8" Drill, 4 amp,0-2500 rpm,rev	110	65
DW510K	1/2" v/spd Hammer Drill w/case	288	165
DW682K	NEW Biscuit Joiner with case	428	225

PORTA NAILER

401	Porta Nailer complete	266	198
501	Face Nailer complete	265	195

WERNER LADDERS

6204	4' Fiberglass	179	65
6205	5' Fiberglass	199	75
6206	6' Fiberglass	215	80

SUMMER KIT SPECIALS

9852K	Porter Cable 9852 Drill Kit w/extra batt		185
9853K	Porter Cable 9853 Drill Kit w/extra batt		175
7336K	Porter Cable 5" var. spd Random Orbit Sndr w/cse & 1 roll 100X & 150X discs	273	159
7336K	Porter Cable 6" var. spd Random Orbit Sndr w/cse & 1 roll 100X & 150X discs	278	165
555K	Porter Cable Plate Biscuit Jointer with case & 1000 assorted biscuits	339	195
JS100K	Freud Joinler w/cs & 1000 biscuits	351	168
1581VSK	Bosch Top Handle Jig Saw with case & 30 Bosch blades	305	182
1582VSK	Bosch CLIC Barrell Grip Jig Saw with case & 30 Bosch blades	305	182
JM100KK	Ryobi Joiner w/1000 biscuits	475	232

BIESMEYER FENCES

B-50	50" Commer. Saw Fence	329	294
T-SQUARE 52	52" Homeshop Fence	249	234
T-SQUARE 40	40" Homeshop Fence	242	208
T-SQUARE 28	28" Homeshop Fence	230	198

WEDGE SMART LEVEL

SM-PR2	2 FT Level with sensor	120	88
SM-PR4	4 FT Level with sensor	150	105
SM-PR6	78" Level with sensor	180	139
SERIES200	NEW 2FT Level with sensor		55

Msx636	FEIN Electric Oscillating Triangle Sander Kit	Sale	279
LPN672	PONY Air Palm Nailer w/glove	Sale	94.99

JORGENSEN ADJUSTABLE HANDSCREWS

Item#	Jaw Length	Open Cap	List	Sale	Box of 6
#0	8"	4-1/2"	19.00	11.89	61.00
#1	10"	6"	21.76	12.89	70.65
#2	12"	8-1/2"	24.95	14.95	80.95
#3	14"	10"	31.61	18.95	104.95
#4	16"	12"	42.30	24.95	143.95

JORGENSEN STYLE 37 2-1/2"Throat 1/4"x3/4"

Item#	Jaw Length	List	Sale	Box of 6
3706	6"	9.86	6.25	34.75
3712	12"	10.92	6.75	37.75
3718	18"	12.05	7.25	40.75
3724	24"	13.16	8.19	43.75
3730	30"	14.70	9.10	49.75
3736	36"	16.05	10.19	55.75

PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
50	3/4" Black Pipe Clamps	13.61	7.89	84.99
52	1/2" Black Pipe Clamps	11.37	6.50	69.50

BOSCH

1581VS	Top Handle Jig Saw	265	138
1582VSC	NEW CLIC Barrell Jig Saw	265	138
	Bosch Metal Case for above Jig Saws	34	32
	Bosch 30 blade assortment for Jig Saws		26.99
1942	Heat Gun 600° - 900°	111	69
12720	3" x 24" Belt Sander with bag	329	178
12730	4" x 24" Belt Sander with bag	345	189
11-212VSR	Bulldog 3/4"SDS Rtry Drill	370	198
1347AK	4-1/2" Grinder w/case & access.	170	108
1348AE	5" Grinder 8.5 amp	195	118
1194VSR	1/2" var. speed Hammer Drill	264	145
1194VSRK	above Hammer Drill w/case	292	179
1608	5.6 amp Laminate Trimmer	149	84
1609K	Lam Installers Kit with 1609	309	175
1609KX	Deluxe Installers kit	361	198
1601	1 HP Router	184	105
1604	1-3/4 HP 2 Handle Router	236	134
1604K	same as above w/cse & acc	287	165
1606	1-3/4 HP D-handle Router	273	158
3258	3-1/4" Planer w/blade guard	239	139
3258K	3258 Planer with steel case	265	154
32700	3" x 21" Belt Sander with bag	260	145
1273DVS	var. spd 4" x 24" Belt Sander	370	193
1614	NEW 1HP Plunge Router	220	128
1614EVS	NEW 1-1/4HP v/spd Plge Rtr.	255	149
1613	NEW 1-3/4 HP Plunge Router	286	164
1613EVS	NEW 2HP v/sp Plunge Router	320	184
1615	NEW 3 HP. Plunge Router	395	228
1615EVS	NEW 3 HP v/spd Plge Router	460	244
1632VSRK	Recip Saw 8.4A orb-v/spd	225	145
3050VSRK	9.6V cdls v/sp Drill Kit comp	256	138
3051VSRK	3050VSRK w/keyless chuck	266	145
1370DEVS	6" Random Orbit Sander	481	219
3283DVS	5" Random Orbit Sander	159	98
3283DVSK	3283DVS Kit complete	220	119

ELU BY BLACK & DECKER

Model		List	Sale
3338	2-1/4 HP v/spd Plunge Router	427	255
3304	1 HP var. spd Plunge Router	292	184
3375	3-1/8" Univ. planer 7.2 amp	313	155
3380	Biscuit jointer with case	542	248
4024	3 x 21 var. speed Belt Sander	322	184

BLACK & DECKER

1166	3/8" Drill 0-2500 rpm 4 amp	100	65
1703	10" Mitre Saw w/73-770 blde	313	179
4011	1/4 sheet Palm Sander	82	59
79-034	Workmate 400	175	105
2694	7-1/4" Super Saw cat	248	137
2695	8-1/4" Super Saw cat	271	153

DAVID WHITE

LP8-20	Sight Level package - 20x	310	198
L6-20	Meridian Level - 20x	290	189
LT8-300	Level Transit - 26x	650	445
LT8-300P	above Level w/optical plum	769	525
LT6-900	Level Transit - 20x	389	245
ALT6-900	Automatic Level - Transit - 18x	549	385
ALTP6-900	above Level w/tripod & rod	600	438
ALP6-18HD	above Level w/tripod and rod	550	372

RYOBI SPECIALS

JP-155	6-1/8" Jointer/Planer	611	295
TS-254	NEW 10" Mitre Saw	397	195
TS-254K	above Saw with acc. kit & B&D 73-770 carbide blade	495	245
AP10	10" Surface Planer 13 amp	820	355
RE600	3 HP Plunge Router	431	209
BE321	3" x 21" var. spd Belt Sander	272	135
SC160	NEW 16" Bench Scroll Saw	261	144
TFD220VRK	12V cordless Drill Kit	325	165
JM100K	NEW Biscuit Jointer w/case	431	204
RS115	NEW4-1/2"v/sp Rdm Orb Sndr	134	74
BT3000	NEW 10" Table Saw	699	545
TSS220	NEW 8-1/2" Slide Comp. Saw	790	445
DS1000	NEW Detail Sander	80	55
RS112	NEW Palm grip Random Orb Sndr	80	59
AP12	NEW 12" Bench Planer	840	425

LAMELLO BISCUIT JOINTERS

TOP 10	"Simply the Best"	699	559
STANDARD 10	"Professionals Choice"	499	399
COBRA	NEW Biscuit Joiner	Special	299

QUAL-CRAFT PRODUCTS

2200	Pump Jack	79	58
2201	Pump Jack Brace	30	20
2203	Pump Jack guard rail holder	31	21
2204	Workbench & rail holder combo	53	39
	Buy any 6 (can be assorted) deduct additional 10%		
2601	Wall Jack	167	114
	Lots of 4 deduct additional 10%		

PORTER CABLE

690	1-1/2 HP Router 8 amp	240	134
9690	690 Router with steel case	306	149
691	1-1/2 HP Router D-handle	260	140
695	1-1/2 HP Router/Shaper	335	204
698	HD Shaper Table	185	123
351	3" x 21" Belt Sander w/o bag	245	140
352	3" x 21" Belt Sander with bag	255	144
360	3" x 24" Belt Sander with bag	330	179
361	3" x 24" Belt Sander w/o bag	310	169
362	4" x 24" Belt Sander with bag	345	188
363	4" x 24" Belt Sander w/o bag	330	183
315-1	7-1/4" Top Hdle Circular Saw	210	118
9315-1	315-1 comp. w/cs & carb bld	240	135
617	7-1/4" Pushhandle Saw	210	119
9617	617 comp. w/cse & carb blde.	240	135
314	4-1/2" Trim Saw	240	135
97751	1/2" v/spd Hammer Drill w/cse	260	155
9629	Recip Saw var. speed 8 amp	250	144
9118	Porta Plane Kit 7 amp	360	198
505	1/2 sheet Pad Sander	210	116
6611	3/8" var. speed Drill 5.2 amp	200	115
6614	1/2" var. speed Drill 0-750 rpm	210	120
6615	7514 with keyless chuck	215	124
7649	Top handle Jig Saw 4.8 amp	250	145
330	Speed Block Sander 1/4 sheet	103	58
555	Plate Biscuit Jointer with case	315	168
345	6" Saw Boss 9 amp	180	102
9345	345 comp. w/cse & carb blde	210	119
9647	TIGER CUB Recip. Saw	195	115
9637	Full var/spd Recip Saw 8 amp	250	138
7519	3-1/4 HP Router 2 Handle	410	224
7518	3-1/4 HP 5 speed Router	475	259
7538	3-1/4 HP Plunge Router	410	224
7399	5.6 amp Drywall Cutout Unit	140	82
7310	5.6 amp Laminate Trimmer	150	88
97310	Laminate Trimmer Kit comp	345	192
7334	5" Random Orbit Sander	210	119
7335	5" var. spd Rndm Orbit Sndr	230	129
7336	6" var. spd Rndm Orbit Sndr	235	134
73333	NEW Dust Collection system		24.50
693	1-1/2 HP Plunge Router Base	295	165
6931	Plunge Router Base	120	75
7539	3-1/4HP var/spd Plunge Router	475	259
9852	12V 3/8"Drill w/cse 0-1000rpm	270	149
9853	9852 with keyless chuck	270	149
9854	12V 1/2" Drill w/cse 0-360 rpm	280	155
8900	12V battery for above drills	Sale	39
	New Tools by Porter Cable		
332	Palm Grip Rndm Orbit Sander	109	64
333	above Sander with dust bag	125	74
352VS	3x21 Belt Sander w/bag v/spd	280	159
7116	24" Omni Jig	470	288
334	333 Sander with PSA pad	125	74
550	Pocket cutter with case	330	185
7700	10" "Lazerloc" Miter Saw	634	345

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FORECAST WEATHER WITH A STICK

Every time Harley Refsal, our carving consultant, returns from a teaching stint in Norway, we expect to hear some folklore. Last time, it was the weather stick.

It seems that rural Norwegians have more faith in weather sticks than media forecasters. A glance out the window at the trusty predictor indicates rain or shine for the day ahead.

Made from a section of green branch cut from a live tree (the tree species doesn't matter) so as to leave one long twig attached (see *left*), the weather stick reacts to barometric pressure. When the twig's up, expect a clear, pleasant day; with the twig down, inclement weather's on the way. No incline, no change.

First power tool honor claimed by Fein

Cris Cable, vice-president of marketing for Fein Power Tools, Inc., of Pittsburg, replied to our story in the December 1992 issue about Black & Decker's invention of the portable electric drill with a pistol grip. He enclosed the photo *right* of the world's first hand-held power tool, an electric drill developed by Wilhelm Emil Fein in Germany in 1895.

The direct-drive drill's chuck capacity was 3/16", it weighed 16½ pounds, and operated on DC current that was only available by plugging it into a light socket. Today, the family owned company, headed by Hans Wolfgang Fein, manufactures over 200 types of high performance power tools.

Fein's first-ever, hand-held power tool of 1895 weighed 16½ pounds.

Environmentally correct wood

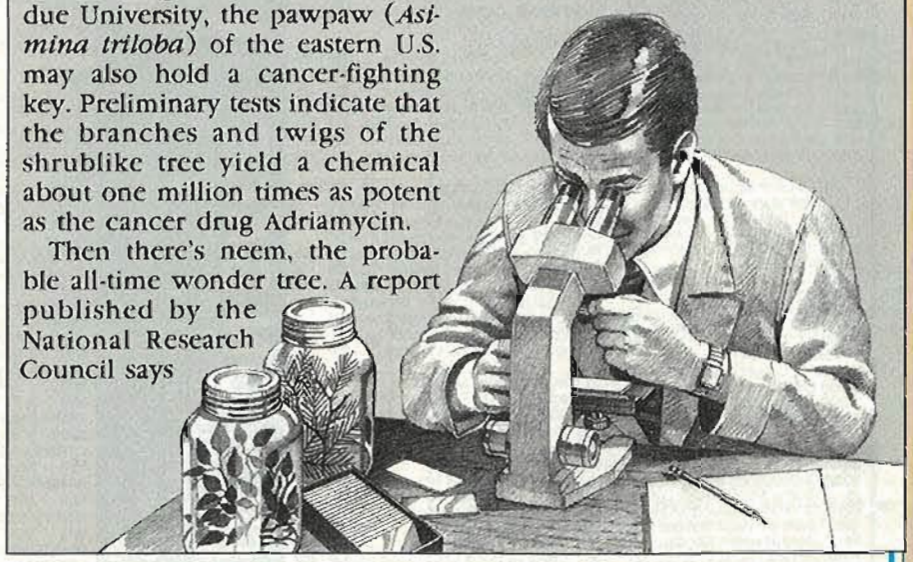
In its effort to alert woodworkers about the responsible use of often-endangered tropical hardwoods, the Woodworkers Alliance for Rainforest Protection (WARP) has urged the use of wood species new to the world timber trade. Termed "lesser-known species" (LKS), these woods are responsibly harvested on a sustained-yield basis by small rainforest cooperatives and marketed in the U.S. and elsewhere by environmentally sensitive companies or individuals. For a list of LKS wood species and who sells them, send a SASE to *WARP, Box 133, Coos Bay, OR 97420.*

OVERLOOKED TREES CATCH EYE OF SCIENCE

If you haven't heard, the yew tree (*Taxus brevifolia*) of the Pacific Northwest has risen to national prominence from its former lowly economic status. That's because Taxol, a drug derived from its bark, can treat certain types of cancer. With this find in mind, scientists now seem to be increasingly scanning the globe for new remedies from trees, and with some success.

According to researchers at Purdue University, the pawpaw (*Asimina triloba*) of the eastern U.S. may also hold a cancer-fighting key. Preliminary tests indicate that the branches and twigs of the shrublike tree yield a chemical about one million times as potent as the cancer drug Adriamycin.

Then there's neem, the probable all-time wonder tree. A report published by the National Research Council says that the neem tree (*Azadirachta spp.*), of tropical America, could solve several of man's problems. Although the wood is used locally for furniture and cabinets, the leaves can produce pain-killing drugs and healing skin ointments. From its seeds come environmentally friendly insecticides. Even the tree's twigs, with one end fuzzed, prove to be decay-preventing toothbrushes!

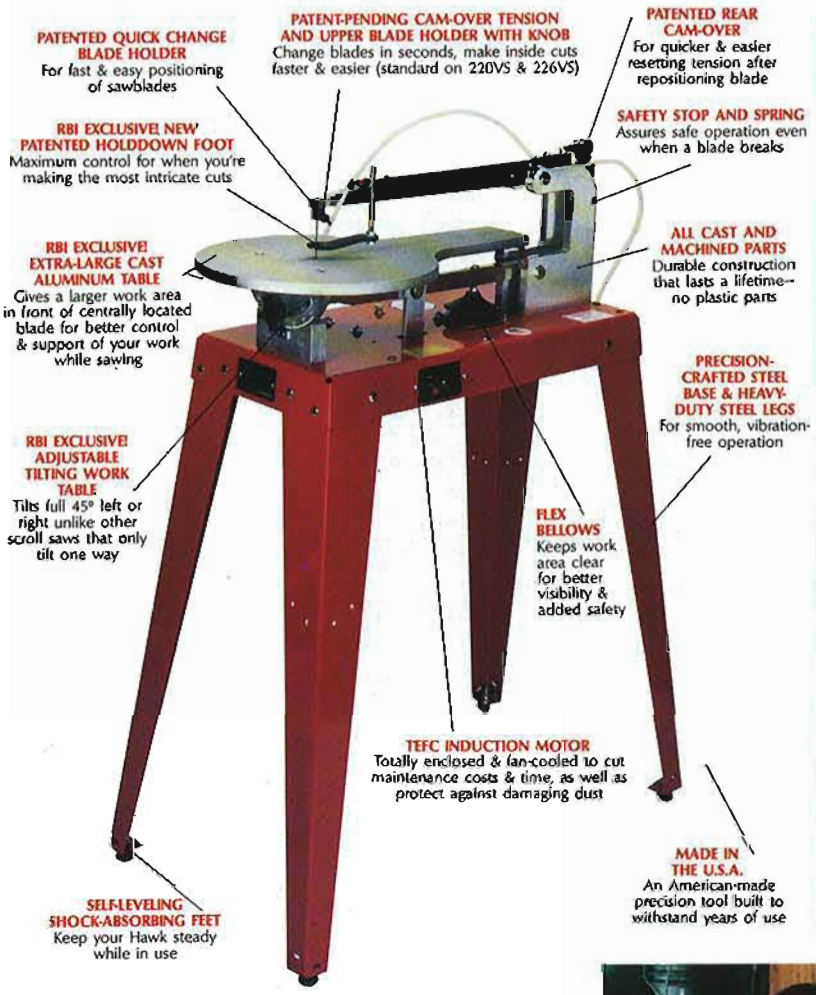


Photograph: Fein Power Tools, Inc.
Illustrations: Jim Stevenson

The American Toolmaker

RBI Hawk Scroll Saws

13 REASONS WHY WE'RE #1



According to the Editors of WOOD®, "RBI 220VS & 216VS Scroll Saws rate EXCELLENT OR GOOD in all areas tested."
—WOOD Mag. Sept. 91—
Scroll Saw Article

RBI was the only manufacturer to have all models tested rate "EXCELLENT" in Vibration—Speed Control—& Quality of Cut from that same review by the editors of WOOD Magazine.

C28

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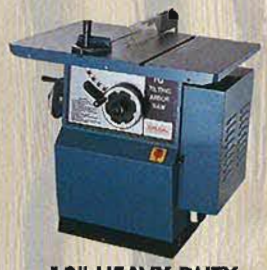
10" TABLE SAW

***EN-TB10**
- 1-1/2HP 110/220V
- CAST IRON TABLE

REG: $350.00
SPECIAL: $335.00



10" HEAVY DUTY TABLE SAW

***EN-HTB10**
- 3HP 220V
- TRIPLE V BELT DRIVE, 5/8" ARBOR
- SOLID CAST IRON TABLE+WINGS
- PRECISION FENCE + MITRE GAUGE

REG: $1,190.00
SPECIAL: $1.135.00

12" PLANNER

EN-PN12
- 1HP 16 AMPS 110V 16,000 CPM
- 2 BLADE CUTTERHEAD
- 26.2 FPM FEED RATE

REG: $380.00
SPECIAL: $355.00

15" PLANNER

***EN-PN15**
- 2HP 110/220V 15 AMPS 220V
- 2 SPEEDS, 13,500 CPM
- 3 BLADE CUTTERHEAD
- STAND INCLUDED

PRICE: $795.00

WOOD SHAPER

***EN-WS05**
- 1HP 16 AMPS 110V
- REVERSIBLE MOTOR
- CAST IRON TABLE
- 1/2" SPINDLE

REG: $280.00
SPECIAL: $265.00

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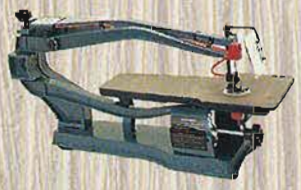

22" SCROLL SAW

EN-SC22
- 1/8HP MOTOR
- SINGLE SPEED 1,725 SPM
- 22" THROAT, 2" MAX CUT

REG: $150.00
SPECIAL: $145.00

HEAVY DUTY WOOD SHAPER

***EN-WS10**
- 3HP 22 AMPS 220V
- 3/4"+1" SPINDLES
- 3" SPINDLE TRAVEL (1/2" SPINDLE AVAILABLE)

REG: $860.00
SPECIAL: $845.00

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3H.P. DUST COLLECTOR

***EN-DC30**
- 3 HP 220 V 22AMPS
- 1850 CFM
- INTAKE HOLES: 3 @4"

REG: $455.00
SPECIAL: $450.00

16" BAND SAW

***EN-BS16**
- 1-1/2 HP 110/220V 3 SPEEDS
- CAST IRON TABLE
- RIP FENCE & MITRE GAUGE INCLUDED

REG: $520.00
SPECIAL: $490.00

18" HEAVY DUTY BAND SAW
***EN-BS18S**
PRICE: $645.00

18" SUPER HEAVY DUTY BAND SAW

***EN-BS18**
- 2HP 110/220V 11 AMPS 220V
- 3,300 FPM BLADE SPEED
- RIP FENCE & MITRE GAUGE INCLUDED

REG: $910.00
SPECIAL: $880.00

6" X 9" BELT/DISC SANDER

***EN-SN69**
- 3/4 HP 110/220 V
- 6" X 48" BELT,9" DISC
- TABLE TILTS: 0°-45°, BELT: 0°-90°
- WITH GAUGE

REG: $195.00
SPECIAL: $185.00

6" JOINTER

***EN-J006**
- 1HP 110/220V 14 AMPS 110V
- CAST IRON TABLE
- 13,500 CPM
- 3 BLADE CUTTERHEAD

REG: $340.00
SPECIAL: $300.00

8" HEAVY DUTY JOINTER
***EN-J008**
REG: $675.00
SPECIAL: $635.00

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